THE IRON AGE

THURSDAY, JANUARY 8, 1891

The Kimble Automatic Steam Engine

The novel design of the steam engine, of which we here present drawings of the principal parts, will repay close study. It will be seen that the piston is of the rocking type, and is mounted upon a shaft, to one exterior end of which is secured an arm to which the connecting rod leading to the crank is attached. This plan does away entirely with the crosshead and the long reciprocating piston of the ordinary engine, substituting therefor a rocking shaft carrying parts which serve the same purpose as the crosshead and piston. It is claimed that this construction produces much less friction than the common type, and that in the steam end of this engine the friction is reduced to a minimum owing to the circular sliding surfaces. The rocking piston is sustained upon long bearings at each end, and turns about one-quarter of a revolution at each stroke of the engine. The only friction outside of the shafts to which the rock cranks attach is the slight pressure on the packing strips introduced to keep the piston steam tight. It is further claimed that this engine, which is manufactured by the Kimble Engine Company of Kalamazoo, Mich., saves from 30 to 50 per cent. in friction over any slide valve throttling engine and from 5 to 15 per cent. over any slide valve automatic engine. Doing away with the long piston and piston rod reduces very considerably the space occupied by the engine, which is compact, self contained, and which needs no heavy foundation or anchorage.

The connecting rod shown in Fig. 3 is a single piece of steel, without straps, gibs or keys. The eye of the rod is open at the bottom, and the brass box or bushing open at the top, whereby the oil or grease is freely distributed the whole length of the wrist pin. The adjustment for wear is made by the tap bolt that passes through the jaws below the eye in rod, the bolt being secured by a lock nut. Many of the leading railways in the country today use a solid rod with a brass bushing which is replaced easily and at little expense. These rods are not planed and burnished. They are smooth steel rods, painted a plain steel color, as is customary on lathes, planers or locomotives.

Fig. 4 shows the balanced valve with live steam port, and steel spindle. As this is a rotary valve resting on these spindles in suitable bearings, the wear on the valve proper is extremely small.

Fig. 5 shows a vertical section and Fig. 6 a cross section, so it can be seen at a glance that the pressure of the steam is evenly distributed all through it, yet having sufficient pressure from the boiler to hold it in place. It will be noticed that the steam enters the cylinder at right angles to the piston and above the center of the pin through the connecting rod, thereby getting the greatest possible force of the steam. The packing of the piston is a cast iron strip, from $\frac{3}{8}$ to $\frac{1}{2}$ inch square, set in a groove on the sides and upper end of the piston wing, held against the upper part and sides of steam chest by coil springs made of No. 16 and 18 brass wire. There is no steam pressure to force the packing out to make it steam tight, and there is no riding of the piston's weight on this packing whatever. The eccentric is so adjusted that the lead of the valve is constant whether the point of cut-off is early or late in the stroke, the point of cut-off being automatically regulated according to the work required of the engine.

The advantages of working steam expansively are well known. The gain of the automatic cut-off over the plain engine with throttling governor is higher average piston pressure from the same boiler pressure, utilizing the expansive force of the steam, which otherwise is lost to a great extent in the exhaust. The speed of the engine may be increased or diminished through considerable range from standard speed by increasing or diminishing the tension of the spring.

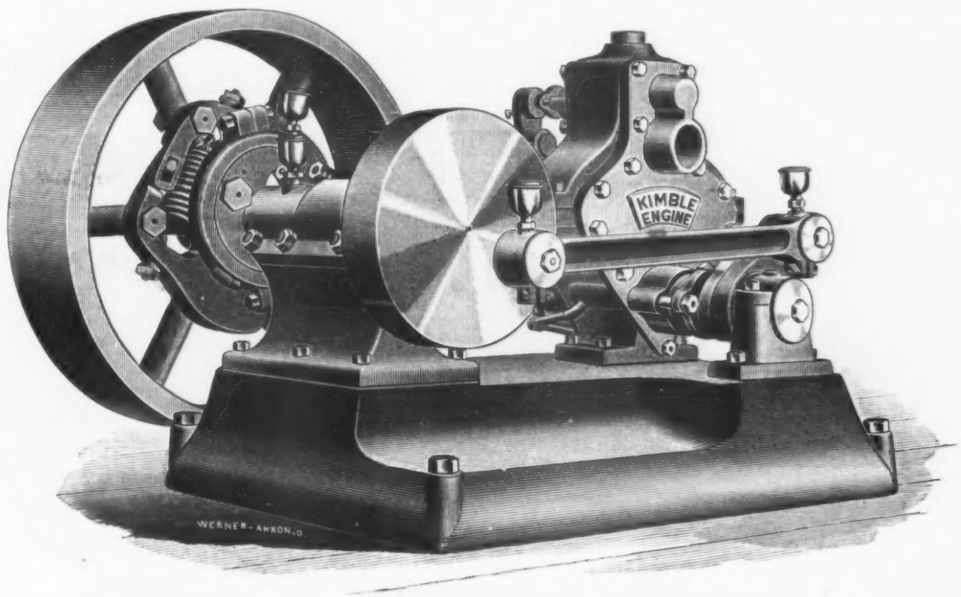


Fig. 1.

THE KIMBLE AUTOMATIC ENGINE.

Buffalo's Commerce in 1890.

The year 1890 is a record breaker in the history of the lake commerce of Buffalo, for the total receipts of grain (including flour as wheat) at that port reached the magnificent aggregate of 119,777,949 bushels—the largest on record. There are other noteworthy features in the statements of the lake and canal commerce of the year. While the total grain receipts beat the record (117,000,000 in 1889) by 2,000,000 bushels, the receipts of wheat only reached 24,000,000 of bushels—about one-half the receipts in 1887 and 3,000,000 less than the receipts in 1861. The receipts of corn were 43,000,000, as against 62,000,000 in 1862; but flour and barley exceeded the highest previous importations and brought up the total to the top figures. The imports of flax seed, iron ore, and copper ore, show large gains. In up freights, coal reaches the big total of 2,044,786 tons, of which Chicago took 967,737 tons, against 1,004,089 last year. The Lake Superior ports (Duluth and Superior) took 64,000 tons more than last year. Lake freights also break the record. The average for 1890, 1.9 cents per bushel is the lowest known in the history of the lake marine. The Erie canal in seven months carried 38,000,000 bushels of grain from Buffalo to New York; the railroads in 12 months, 42,000,000.

A Great Traveler.—The iron train shed at the Jersey City depot of the Pennsylvania Railroad is now being erected with the aid of what is perhaps the largest specimen of false work or traveler ever constructed. The shed will be 600 feet long by 248 feet wide. There will be 10 pairs of arched trusses, each pair 43½ feet apart. The trusses of each pair will be 14½ feet apart, and they will be laterally braced together. The traveler will admit of the construction of three of the big 90-ton trusses at a time; that is, one pair and one truss of the next

pair. Hence the derrick is about 60 feet wide on top by 230 feet wide and 80 feet high. The traveler rests on 12 freight car trucks, which run on the permanent station tracks. In erecting the iron work, after each three trusses are put in place and braced, the wedge blocks which support it on the traveler are knocked out and the traveler is moved forward by the winding engine, three ropes being attached to alternate trucks to secure an even pull on the different parts. The members of the arched truss forming the roof of the shed will be hoisted into position by tackle running to the winding engine on the tracks below.

The Bath Iron Works expect to lay the keels for gunboats Nos. 5 and 6 in about a fortnight. The frames and beams of the protective deck are all ready to go together. At present there are 430 men at work in the Bath Iron Works shops. A constantly increasing force will be kept on hand until the ships are completed. The builders expect to be able to launch the two craft by next October. The patterns for most of the machinery castings are in the different shops. Many of the castings undertaken by outside firms have arrived and are being fitted up.

Jones & Laughlins' Chicago Branch.

Jones & Laughlins are considerably enlarging their warehouse facilities in Chicago. The trade of the past year was the heaviest ever handled by the Chicago branch, and the outlook for the coming year is regarded as most promising for further expansion. Much of the prestige of this house has been due to the advantages gained by carrying large stocks of goods in their line, enabling them to make prompt shipments. In no previous year did they cover so wide an expanse of territory as in 1890. The necessity for greater warehouse room has thus been forced on them. The warehouse at Lake and Canal streets has been improved as much as the space will admit, another elevator being added to increase the conveniences for handling goods. An entirely new warehouse has been added at Green and Kinzie streets, occupying an excellent location between the Northwestern and the Pan Handle tracks. Its dimensions are 40 x 125 feet, one story high, and it is used for nails and spikes. In connection with this warehouse a beam yard has been established for handling beams and channels, which is equipped with two steam derricks and a Newton cold saw for cutting large sized beams to exact lengths, as required by builders. Jones & Laughlins are now rolling rounds up to 7½ inches in diameter, in either steel or iron, the sizes running by eighths. Few, if any, of their competitors are turning out this class of work. Such large diameters are usually forged, while in smaller rounds the sizes run by quarters instead of eighths. Makers of shafting who desire exact diameters will appreciate the improvements introduced by this firm.

Statistics of the commerce of Philadelphia show that in 1890 the arrivals were 8456 coastwise, and 1519 foreign vessels, as against 8670 coastwise and 1313 foreign in 1889. The growth is confined, it will be observed, to the foreign traffic.

Fig. 3.—Connecting Rod.

Fig. 6.—Cross Section Fig. 4

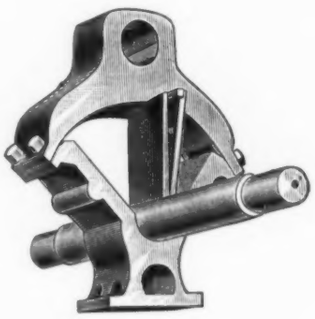


Fig. 7.—Cylinder.

Fig. 4.—Balanced Valve.

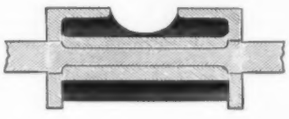


Fig. 5.—Transverse Section Fig. 4.

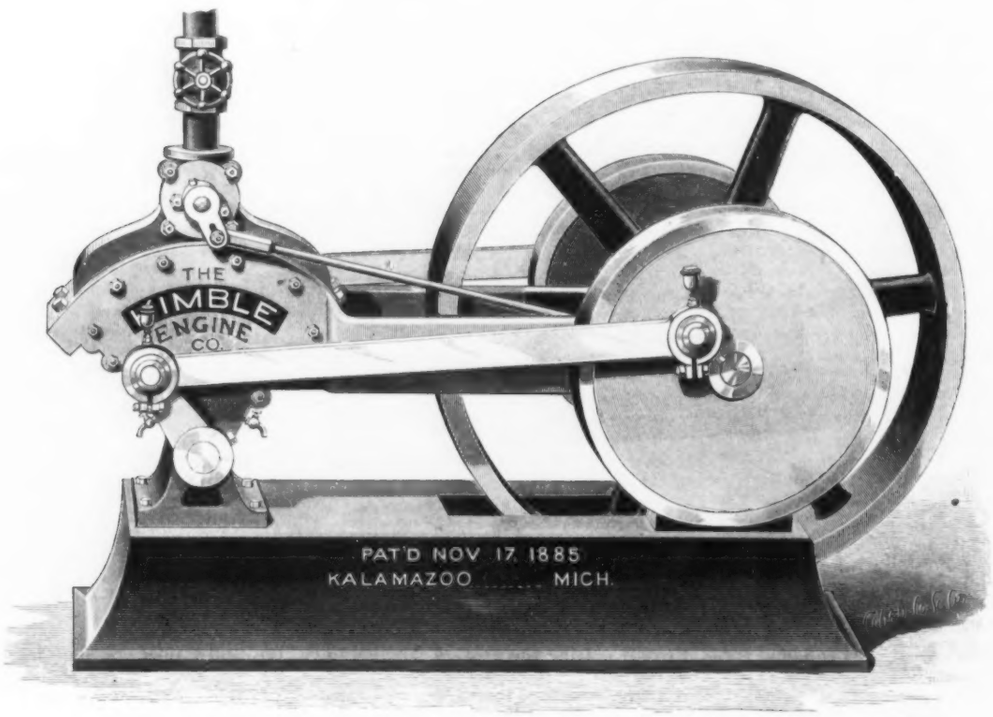


Fig. 2.

THE KIMBLE AUTOMATIC ENGINE.

THE VALLEYS SHUT DOWN.

Position of the Iron Makers of the Mahoning and Shenango Valleys.

As yet no answer has been received from the railroads by the pig iron manufacturers of the Mahoning and Shenango valleys in reference to their request for a reduction on coke and limestone rates, and also for a reduction in the rate charged for hauling pig iron from the valleys to Pittsburgh. In consequence of this the pig iron men have unanimously decided that there is but one course for them to pursue, and that is to close down their furnaces until their requests for lower rates have been granted, or until the price of pig iron advances to a figure that will warrant the resumption of operations. From the commencement of the agitation of the furnace owners for lower freight rates and a reduction in the price of coke their cause has been injured to no slight extent by the publication in various newspapers of statements that are wholly at variance with the truth. Especially is this true of some of the Pittsburgh papers. We remember to have seen one statement to the effect that unless the coke men reduced the price of coke to $1.35 per ton every blast furnace in the Mahoning and Shenango valleys would be closed down for an indefinite period. It is hardly necessary to state that no such threat was made, nor was a request made for a reduction in coke to that figure. As showing that the cause of the pig iron men was injured by these reports, we can state that at the conference recently held in Pittsburgh between the pig iron men and the railroad men, several of the largest furnace owners stated to the representatives of the railroads that they were not responsible for the statements that were being published in the newspapers. We are in receipt of a communication on this subject from one of the largest pig iron manufacturers in the Mahoning Valley, in which their position is fully set forth. The letter reads as follows:

"It has not been the desire or intention of the furnace managers to dictate a price for the raw material or the rate for the hauling of the same to the furnaces, but the time has arrived when no furnace manager in either the Mahoning or Shenango Valley can go into the market and buy the raw material and convert it into pig iron and sell it for enough to cover the cost. This had been the state of affairs for some time in both valleys, and at a joint meeting of the managers of all the furnaces of the two valleys, held in Youngstown more than a month ago, it was agreed that we would ask the manufacturers of coke to make a reduction to us. We did not make any demand on them what the reduction should be, and we also asked the railroads to make a less rate of freight not only on coke and other materials which enter into the manufacture of iron, but also on the product of the furnace. They promised to take the matter under consideration, and up to the time of our meeting in Youngstown, on Tuesday, the 30th ult., they had taken no action, and we inferred from that that they did no intend to. The coke manufacturers put the coke down to $1.90 per ton on board cars at ovens in Connellsville regions. To some this would be a reduction, to others it would not be, and this being the only concession made to the furnace managers they got no relief, consequently were obliged to do one of two things, either to shut down or run at a loss.

"The railroads coming into this valley haul Southern iron from Cincinnati to valley, a distance of 300 miles, for $1.75 per gross ton, and that is all they get out of it. They charge 80 cents per ton for pig iron going to Cleveland or Pittsburgh, a distance of 65 miles only, and for every ton of pig iron that is produced they haul at least 3½ tons of raw material to manufacture it, and, therefore, we say that we are being discriminated against in favor of Southern iron. We feel that the railroad companies have not put forth an effort to meet our requirements, and do not believe that they fully realize our true condition; but the 23 furnaces in the two valleys will be closed between now and the 10th inst. Some of them have already closed down, and will remain so until the price of raw materials entering into the manufacture of iron and the freights on the same are put down to a point that we can make iron at a profit, or the price of pig iron advances until there is a profit in it."

Another large furnace operator in the Mahoning Valley gives his views of the situation of the pig iron men as follows:

"There has been so much said in the newspapers about this shut-down movement here, and so much of it has been untrue, that it will be very hard indeed to write anything about it that would straighten it out. The newspapers insist that whatever has been done has been in the way of a threat, which is not the case. It is simply a matter of business. We are on the wrong basis here, and it is simply a question of readjustment of the cost of making pig iron in the two valleys to compete with other localities. This reduction must start in from the mining of the ore down to and including the freight on the pig iron to the point of consumption. We already have assurances of a reduction in railroad rates from the ore mines to the lake. We know absolutely that there will be a material reduction in lake freights from Michigan ports to Lake Erie ports, and we expect that when the proper scale of wages is arranged in the coke region a still further reduction will be made in the price of coke. We also think that the railroad companies will take a sensible view of the matter and come to our relief. All the meetings that have been held with the coke men and railroad people have been of the most amicable nature, everything has been discussed in a business way, and there have been no threats made of any kind. The shut down will, of course, benefit the market even if nothing else occurs."

We believe the above correspondence clearly defines the unpleasant position in which the pig iron manufacturers of the Mahoning and Shenango valleys are now placed. The shutting down of the blast furnaces in these places is to be regretted, as it will entail considerable loss not only to the furnace operators, but to the employees as well.

A serious accident happened on board the British battle ship Inflexible, by which one of her large boilers was rendered useless. By some means at present unexplained the water in the boiler was allowed to run low, with the result that the steam pipes got red hot, burning the "lagging" off as far as the upper deck. Some of the tubes were blown out, and Captain Kane, who was passing at the time, was badly burned on both sides of the face and on the neck. The plates bulged in, and the boiler was rendered completely useless. It is stated that the gauge glass must have been defective, as it showed plenty of water in the boiler at the moment of the accident. A court of inquiry has been ordered.

In common with other Western cities, Beatrice, Neb., has taken advantage of a watercourse to furnish power for manufacturing. The Blue River has been dammed at this point, and by means of turbine wheels a force of 400 horse-power is maintained during the year. The Blue River varies but little during the seasons, and the water can be depended on at all times. A half dozen large mills and factories receive their motive power from this source.

American Tin Plate.

VIEWS OF A WELSH MANUFACTURER.

The London *Iron and Steel Trades Journal* says editorially that "Mr. J. H. Rogers of the South Wales Tin Plate Works, at Llanelly, and the Cwmbwra Works, Swansea, arrived home from his American trip late on Thursday night last week, and at once intimated to the employees of the South Wales Works that on Saturday, at noon, he would tell them the result of his observations on the other side. The tin plate manufacturers who have recently visited America seem to have been singularly reticent as to the opinion they have formed of the ultimate effect of the McKinley bill on the Welsh tin plate trade. Mr. Rogers has brought home good news for the Welsh tin plate workmen, and he took the very earliest opportunity of 'breaking it' to his men. Mr. Rogers first alluded to the fact that the long dreaded tariff bill had become a law, but hardly had the blow been struck by the ultra-protectionists of America, when, at the elections following, it rebounded, and the McKinley party were defeated at the polls, foreshadowing a reversal of the tactics of the party now in office at no very distant date. This turn of events, Mr. Rogers says, has frightened the manufacturers on the other side of the Atlantic from proceeding to carry out their extensive schemes of tin plate making. Some of these schemes included the erection of works containing 20, 30, and even 40 mills, but so far as he understood, these schemes were given up as soon as it was seen that the people were not in favor of the McKinley bill. Mr. Rogers said he had very little doubt that if the election had not resulted in such an overwhelming Democratic majority they would soon be sending very few tin plates from their country to America. When the results of the election were made known here it was well understood that the new majority would be powerless to alter the policy of the country for a long time to come; but the elections had an immediate influence on the conduct of those who were ready to push into the tin plate trade. Mr. Rogers speaks plainly when he says that but for those election results there would soon be very few tin plates sent from Wales to America. If American iron and steel manufacturers had the assurance of a continuance of this prodigious protective tariff, they were ready to put down any number of mills forthwith; but their hopes were shattered by the elections, and they hesitate to build works dependent for their profits on so unstable a foundation as the McKinley bill. Tariff or no tariff, Mr. Rogers believes that in time America will provide her own supplies of tin plates.

The Americans, he says, have other advantages over the Welsh manufacturers besides the tariff; they have no carriage to Liverpool to pay from there to New York, and to the various towns in America where tin plates were used, the expense averaging 1 shilling 6 pence per box. Coal was very cheap, too, in America. Notwithstanding the higher rate of wages, coal in the Eastern States could be bought at half the price that was paid here. Mr. Rogers saw a coal pit at St. Louis where they had only to go down 60 feet to get a seam of beautiful bituminous coal, 7 feet in thickness, and above it there was again a hard bed of limestone, so that pillars could be almost dispensed with. At Chicago coal of an excellent bituminous nature could be purchased at 6 shillings per ton, and steam

coal at 5 shillings. At St. Louis gas coal was delivered at 6 shillings and steam coal at 4 shillings. At Pittsburgh, again, small steam coal could be bought at 1 shilling per ton in the trucks at the pit's mouth, and bituminous coal for gas producers at 3 shillings per ton. All this gives the Americans great advantages, but there were also disadvantages. In raising the duty on tin plates they had also raised that on tin, so that what was given with one hand was taken away with the other. There were other disadvantages which tended to balance the advantages he had enumerated.

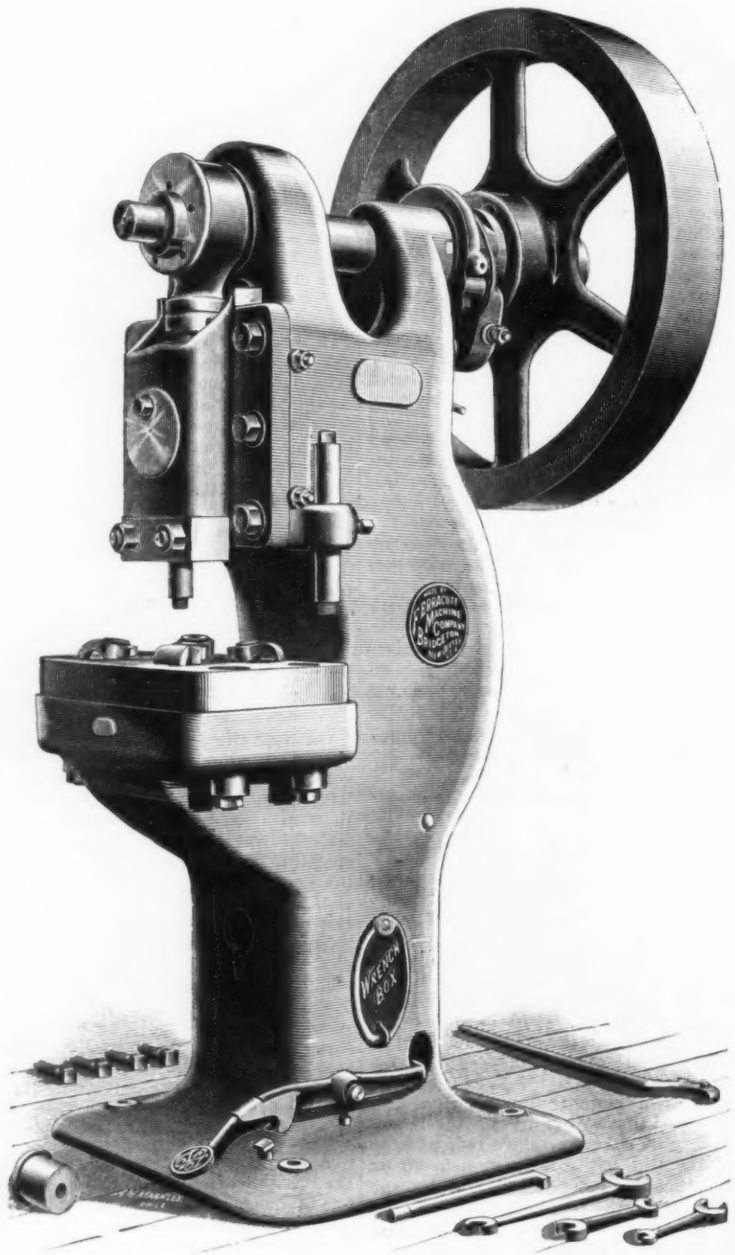
The rise of industries in the States has always been gradual—viz., button making, sheet iron, steel rails and pig iron. In no case had an industry taken root and rapidly expanded. Each commenced in a small way and grew gradually, and Mr. Rogers gave expression to the belief that it would be the same with tin plates. Two works of four mills each, one at Pittsburgh and the other at St. Louis, were now being erected, and in a few months hence these would be making tin plates. The trade would, however, grow but slowly, and it would probably be 10, 20 or even 30 years before the Americans could make all they would need. Mr. Rogers had an interview with President Harrison, and also saw Senator Sherman at his house, and was given three reasons why the increased duty was placed on tin plates, and he considered them the three best ones he had heard. The first one was: Supposing there was a European war, and supposing Russia and France joined together against Germany and England, and Russia and France got command of the sea, and thus prevented England from shipping tin plates to America; such a condition of things would mean the absolute ruin of the canneries, and almost ruin of the farmers who raised fruit and those who raised cattle. Those industries would be at a standstill until the war would be over. Again, supposing there was a general strike or lockout in the trade here, or if the colliers struck or were locked out, the American canneries would come to a standstill. "These were the reasons," said Senator Sherman, "which made us decide through thick or thin to give our country an opportunity to make her own tin plates." It is seldom that even the immediate future of an industry can be forecast, but we may be sure that for the next six months the tin plate trade will be exceedingly active. Importers and consumers will raise their stocks to the highest possible limit before the new tariff comes into force next July.

The Ferracute Punching Press.

The accompanying engraving shows a new style of punching press built by the Ferracute Machine Company of Bridgeton N. J., embodying a number of new features. The frames are much higher, with more bed room, and with larger and heavier fly wheels. The machine is provided with a new automatic clutch, adjustable to different speeds, and also adjustable so that the press may be stopped either up or 30° either way from the top of its stroke for special work. This clutch is so arranged that it reduces the friction usually necessary in an automatic clutch and is very durable in its construction. It is provided also with a safety pin, so that it is unnecessary to remove the belt in setting dies. It is connected with a treadle which has a lock arrangement, so that the press can either be run continuously or be stopped at each stroke if desired.

The fly wheel has a steel disk with four recesses, so that the clutch slide will engage at every fourth of a revolution, instead of waiting a complete revolution, as in most other clutches. The slide bar adjustment is of new form, so as to vary the hight of the ram or slide bar very considerably, and it can be adjusted and locked in a moment. It is graduated so that each degree indicates $\frac{1}{100}$ foot in hight, which is a very convenient feature in setting and recording dies. It can also be used in giving a series of blows with gradually increasing pressure It has a special form of bolster plate with sliding clamps, so that almost any dies can be held in it It also has a new form of stripper clamps and other features which add to the convenience of handling the machine. There are now five sizes of these presses made, and there are also five sizes of corresponding presses made with a gear wheel on the main shaft instead of the fly wheel, and with pinion and fast and loose pulley on the lower shaft, thus giving a slower motion and from 30 to 40 per cent. more power. This press can be used for ordinary shearing and punching and for cutting out blanks, forming them up, &c.

The general dimensions of the press shown, which is the middle one of the series, are: Weight, without extra appliances, about 3500 pounds; hight, floor to top of fly wheel, about 83 inches; hight, bed from floor, 32 inches; floor space occupied, from front to back about 44 inches, and from right to left about 36 inches; hole through bed, front to back, 8 inches; hole through bed, width, 10 inches; hight bed to slide bar at top of stroke and adjustment, 9½ inches; stroke of slide bar, 1½ inches; adjustment of slide bar, 3 inches; diameter of fly wheel, 38 inches; width of fly wheel, 6 inches; weight of fly wheel about 735 pounds; speed per minute about 100.



PUNCHING PRESS, BUILT BY THE FERRACUTE MACHINE COMPANY.

The partial destruction of the factory building on Centre and Elm streets in this city, on the 1st inst., caused a heavy loss. Among the sufferers are A. Dewey, cutlery; E. Sheffler, machinist; the Cleveland Motor Company, Cosmopolitan Range Company and the Union Pearl Button Company.

Milling Cutter.

The milling cutter of which drawings are here presented was designed by U. Eberhardt and H. E. Eberhardt of Newark, N. J., to prevent the slipping of a series of cutters when clamped together upon a spindle. It is especially applicable to the series of cutters used for cutting a number of teeth simultaneously in gear or rack cutting machines. Fig 1 is a side view, Fig. 2 an edge view and Fig. 3 side view of the spindle, furnished with four cutters clamped upon it; *a* are the cutters, *b* is a flat face upon the side, *c* is the hole fitting the spindle, and *e* are shallow radial grooves extending across the center of the cutter. The spindle is provided at one end with a thread and nut, *g*, the driving collar of the spindle being at *h*. Fitted to the grooves *e* and adapted to project sufficiently to engage

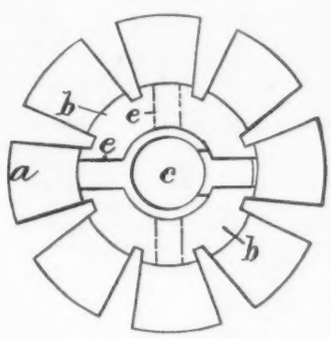


Fig. 1.—Side View.

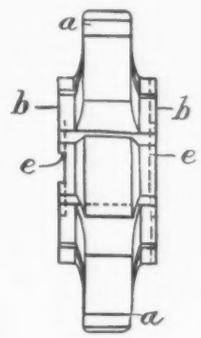


Fig. 2.—Edge View.

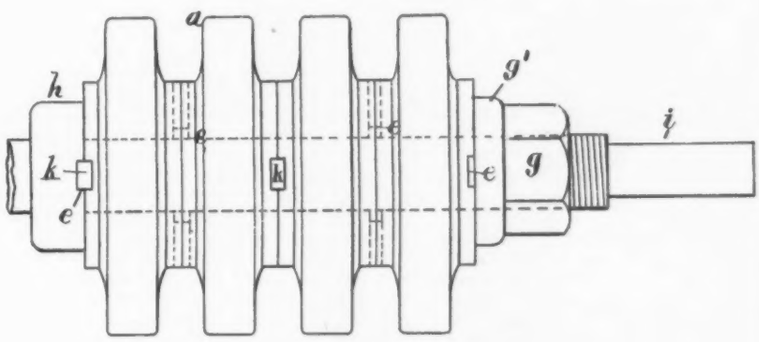


Fig. 3.—Spindle with Four Cutters.

MILLING CUTTER.

in a similar groove formed in the adjoining cutter are the keys *k*, which are shown fitted between the four cutters in Fig. 3, and also in the grooves of the driving collar *h*. In this figure the cutters are shown clamped firmly against the collar by its nut and washer, the first cutter of the series being keyed to the collar and the subsequent cutters being keyed to one another, so that the rotation of the spindle drives the four cutters in the most positive manner, independently of the friction exercised by the nut and its washer.

Since, when a series of cutters are operated simultaneously, as shown in Fig. 3, the transverse strain upon the spindle is very great, it is usual to support the spindle at both sides of the cutters, and therefore a bearing, *i*, is formed as shown at the right hand end of the spindle outside of the threaded portion. The construction adopted in this case is intended for application to flat faced cutters, which are already extensively used, and which would be considerably weakened if made scribed, does not weaken the cutters seriously, as the length of the hub of a gear cutter is almost always greater than the thickness of the hub on the radial line, and the weakening effect of the grooves may be diminished by forming them upon the opposite faces of the cutter at right angles to one another, as shown in Figs. 1 and 2. Each key is formed with a hub upon its inner end, which enters a counter bore cut in the inner edge of the spindle hole of the cutter and thereby preventing the key from coming out.

The incorporators of the new company formed for manufacturing shells and projectiles made of iron or steel and of other articles of like metal will build a plant at New Utrecht to cost $125,000. The trustees are nearly all Brooklyn men. E. W. Bliss heads the list of incorporators. The other trustees are Daniel F. Lewis, Henry W. Slocum, John Winslow, Henry D. Polhemus and Nelson G. Carman, Jr. The company made a contract with the Navy Department about a month ago for the manufacture of shells of forged steel, under what is known as the Cayley-Kortmann process. An extensive piece of property in Fifty-third street, between Second avenue and the bay, at New Utrecht, was purchased by the company three months ago for $150,000, and upon this site they will have their foundries built. Building operations, it is said, will begin at once.

The Peabody Coal Dock.

The Peabody Coal Company's dock, situated in Chicago at the junction of the main Chicago River and North Branch, is one of the largest, and is regarded as the most complete plant of its kind in existence. The portion devoted to anthracite coal has a frontage of 290 feet on the north branch of the river, with an average depth of about 200 feet, and is covered with a most substantial shed equipped with the W. S. Bogle system of handling coal. A brief description of the shed and apparatus is as follows: The shed, which is 40 feet high at its lowest point, is constructed of 10 x 10 inch uprights set in squares of 20-foot centers. The roof plates are composed of 10 x 10 inch timbers with braces of 4 x 6 inch to the centers of the same from the uprights. At right angles to the roof plates and immediately over the uprights are roof joists of 8 x 10 inch also supported from the uprights by braces of 4 x 6 inch. In parallel rows between these 8 x 10 inch and 20-foot centers are rows of 6 x 10 inch roof joists, and the spaces between the 6 x 10 inch and 8 x 10 inch are filled with 2 x 10 inch, 16-foot centers bridged, the whole being covered with dressed flooring and composition and gravel roof of the best quality. From this roof are suspended 14 tracks, leading from the river to the rear portion of the yard. These tracks are in parallel lines, 20-foot centers, and are the basis of the whole system. Immediately on the dock front is a trestle some 24 feet high, carried on double rows of piles capped with 12 x 12 inch oak timbers. On the top of this trestle is laid a 60-pound steel rail track, on which move backward and forward three inclined plane hoisting derricks, each equipped with a hopper and section of suspended track so arranged as to engage either one of the 14 suspended tracks already referred to; the power on each derrick being furnished by a double 8½ x 10 inch cylinder high speed friction drum hoisting engine. At the rear of the dock are the hoppers, which are one of the main features of the construction. They are built in the most substantial manner on four parallel rows of piles capped with 12 x 12 inch oak timbers. They are 38 feet wide by 290 feet long, with an average depth of 14 feet, and hold when filled upward of 3100 tons of anthracite coal. Underneath these hoppers are two railroad tracks, on which are loaded cars for shipment. For that purpose there are 56 openings in the hoppers, each equipped with a screen and a divider, which can all be operated at one and the same time, giving the yard an enormous capacity for shipment. If the necessary service could be had from the railroad company it is estimated that 250 cars could be loaded from these hoppers in 10 hours without crowding their capacity.

On the west side of the hoppers is located the team track, where wagons are loaded from the hoppers through 28 openings 10 feet apart, each one equipped with a screen and a hood arranged so as to throw the coal directly into the wagon, no matter what its hight or breadth may be. A ton a minute is a fair capacity for each one of these openings, the loading of a 3-ton wagon being frequently completed inside of three minutes. On the top of

these hoppers, parallel with the tracks on the dock trestle, is laid a railroad track of 46-pound steel rail, on which are operated backward and forward three cars, each equipped with a double 8½ x 10 inch cylinder friction drum high speed hoisting engine, an automatic carrier and a section of suspended track which is arranged so as to engage any one of the 14 suspended tracks first referred to.

Whenever it is desired to unload coal from a vessel the hoisting derricks on the dock front are moved along the track and connected with the suspended track passing over the place where it is desired to dump the coal. One of the cars operated over the hoppers is moved along and connected at the rear with the same suspended track. The weight rope of the track is then connected with the carrier, and by means of the weight the carrier is moved on to the derrick at the dock front, carrying with it at the same time a steel bucket, with a capacity of holding 2500 pounds of coal. The coal having first been hoisted from the vessel and dumped into the hopper in the derrick already referred to, is allowed to run into the bucket. The operator at the car over the hoppers then causes the carrier to move out along the suspended track to the point at which it is desired to dump the coal, where suitable trip having been placed, the carrier automatically releases the loaded bucket, which is then lowered to the floor of the dock, or to the top of the pile of coal, and there automatically dumped by its own weight. When empty it is hoisted to the carrier, to which it is locked automatically, and again returned to the hoisting derrick for another load. This operation is continued until the vessel is discharged. If desired the coal can be carried over and dumped into the hoppers for transfer direct into cars or wagons. The advantages of this system are its great speed and the minimum of breakage which it entails; the coal having absolutely no fall whatever. In picking the coal up from stock again, the same cars over the hoppers are used, also the same tracks and the same carrier, in connection with a steam shovel invented and patented by Mr. Bogie. This shovel requires the services of three men, two in the pit and one on the car, to operate the engine. The carrier, when at a point on the track directly over the foot of the pile where the men are stationed, automatically lets go of the shovel, which is lowered to the men. After it has reached them the carrier resumes its journey along the track until it reaches a head block placed thereon, immediately over the crown of the pile. As soon as the carrier reaches the head block the operator on the car puts his power in motion. The shovel, having been placed in position by the two men at the foot of the pile, secures its load, is hoisted up to the carrier, to which it is automatically locked, and is then conveyed along the track over the hoppers, where it is dumped automatically. By this method coal can be hoisted 40 feet and conveyed 200 feet at the rate of 1000 tons per day with the labor of three men; the two in the pit may be common laborers, totally unskilled.

The dock is divided up into bins for each size. The bins are formed by permanent partitions of 8 x 8 inch uprights 24 feet high, placed 7-foot centers, and sheeted with 2 inch plank, and held in place by 1½ and 1¼ inch iron rods, and by 6 x 8 inch and 4 x 6 inch wooden braces. The whole surface of the dock is used for storage, as with this system there is no necessity for roadways. Immediately south of and adjoining the hard coal dock is the portion devoted to soft coal, which has a frontage of 300 feet on the main river, with an average depth of about 100 feet. The two railroad tracks already referred to which pass under the hoppers terminate on this portion of the dock on a turntable operated by a steam engine, and running from which is a spur track, capable of holding 10 cars. The tracks underneath the hoppers and this spur track are provided with endless cables, operated by an engine, by which the cars are moved around quickly from or to any place on the dock desired. It is the intention of the company in the spring to place an elevated trestle on this line of the river, on which will be operated two or more derricks, which can be used not only for unloading soft coal from vessel, but also in coaling up tugs and other steam craft.

Mild or Soft Steel.

The technical reader does not need to be informed upon this subject. With him it is by this time an old story. But there is a large class of iron consumers now beginning to use steel for ordinary purposes who are not sufficiently familiar with technical terms to have clearly comprehended what has been written and printed concerning new steel processes. It is surprising how many otherwise well informed persons still retain the old idea that steel is a metal which will always harden and temper, will not easily weld, and cannot be worked in the same way as wrought iron. To them "soft steel" is a queer term, and naturally calls out an inquiry as to what it means and how it is made. To meet the desires of this class of consumers, Jones & Laughlins of Pittsburgh and Chicago have prepared the following explanation of the process which they use, this description being pronounced by steel experts to be the most compact and plainly worded which they have seen regarding the Bessemer process.

As this article has been chosen in many places as a substitute for iron of high grade, it may be interesting to know just what is meant by the term "mild steel." When made in large quantities it is produced to best advantage by the pneumatic or Bessemer process, and to be of best quality the ores from which the pig iron is made should be of the highest grade of Bessemer, free from phosphorus and other impurities. The pig iron is melted in cupolas, built with reference to their special work, and then drawn off in quantities of 6 to 7 tons at a time, and transferred to a converter, a pear shaped vessel located within easy reach of the cupolas. The converter is built of heavy iron plates, lined on the inside with refractory material, and the bottom is provided with air passages called tuyeres, 10 or 12 in number, made of refractory material, similar to the lining. Air is forced at high pressure, by blowing engines, through the trunnions, by which the converter is suspended, to the bottom and through the tuyeres. When receiving its charge the converter is turned on its side and the molten metal is poured into the small end or nose; the converter is then turned to an upright position and the melted iron is violently agitated by the air passing through it at high pressure. Silicon is first burned out, and the carbon contained in the pig iron is consumed, the length of time required being about 20 minutes to each charge. Experience and skill of the operators are here shown in watching the color of the flame and determining the instant at which the pressure of air shall cease. This is when the carbon has been entirely consumed, at which time the melted iron is ready for conversion to steel. The converter is turned down on its side and recarbonizing material, ferromanganese, is put into the converter, sometimes in lumps, sometimes in a molten state, the exact quantity being carefully weighed in order that the steel may be of such quality as the purpose for which it is to be used requires. After this the molten metal is poured into a ladle, and the ladle transferred by cranes over ingot molds into which it is poured, and from these transferred to the blooming mills for rough shaping into such forms as are required for drawing bars, plates, sheets, &c. The result has been to change cast iron to a material as soft as the best quality of wrought iron, capable of being forged to shapes, bent cold, punched or drilled and welded, having an ultimate tensile strength of 60,000 to 65,000 pounds per square inch.

The Braddock Trouble.

A large number of Hungarians and others employed at the blast furnaces of Carnegie Brothers & Co., Limited, at Braddock, Pa., went out on a strike on the 31st ult., on account of the refusal of the firm to lessen the number of their working hours, and also to grant them an increase of 10 per cent. in their wages. The wage scale which has been in operation at this plant for the past three years expired on the last day of December. The scale provided that if either party to the argument desired a change, notice was to be given prior to October 1, 1890. The ore and coke fillers gave notice that they wanted their working day reduced to eight hours, and an advance in wages to average about 10 per cent. After a careful consideration of the request, the firm refused. A sufficient number of men to keep the furnaces in operation refused to join the strikers, and on Thursday, January 1, these men were attacked by the strikers, and a number of the workmen were seriously injured. As yet no deaths have resulted, but it is thought that two of the men are fatally injured. As soon as possible, the sheriff of Allegheny County was summoned, and with the assistance of deputies the ringleaders in the affray were put under arrest. It is thought no more trouble will occur, and at this writing everything is quiet. It was deemed advisable by the management to bank down the furnaces until a sufficient number of men have been procured to operate them. This was done on Friday of last week, but it is believed that the furnaces will be blowing again before the present week is out, as the firm expect to have no trouble in filling the places of the strikers. The rail department of the plant has been idle since the day before Christmas, undergoing needed repairs. It will also resume operations during the present week. The steel workers did not take any part in the strike whatever, as they have expressed themselves as perfectly satisfied with the wage scale under which they have worked for the past three years. In all probability the entire plant will be in full operation not later than the 10th inst.

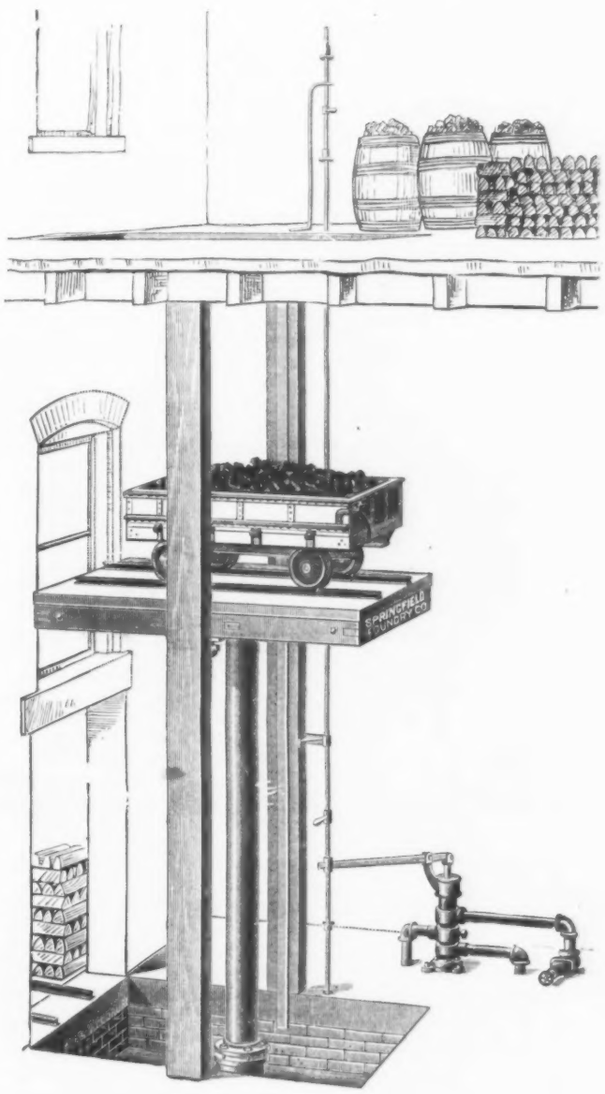
The Treasury Department has decided in the case of small iron bars that the provisions of section 6 of the Tariff act will be sufficiently complied with if the outside band is stamped or branded with the name of the country of origin; and the decision is also applicable to the stamping or branding of bands surrounding kid gloves, thus doing away with the necessity of stamping the individual articles.

Giroud, a prominent civil engineer, has recently found deposits of tin ore in workable quantities on the Colorado River near Llano. The deposits are reported to cover a large area, which is adjacent to the iron fields. Professor Comstock, the Assistant State Geologist of Texas, pronounces the ore valuable. New discoveries are being made daily in the same locality, and 60 deposits have already been located.

Hydraulic Elevators.

In the Titan Hydraulic Elevator, built by the Springfield Foundry Company of Springfield, Mass., the platform is carried upon the top of a strong wrought iron plunger, to which it is securely attached by means of bolts and a cast iron platen, with threaded socket beneath. This plunger is carefully turned to a uniform diameter and smoothly polished. It travels perpendicularly in a cylinder of equal length, sunk in the ground beneath the elevator shaft to a depth corresponding to the hight of the lift. The cylinder is provided with a packing at the top to avoid any leakage of water. The outside of the plunger is made 1½ inches smaller than the inside diameter of the cylinder, thus leaving a space between of ¾ inch. Into this space near the top of the cylinder is admitted the water, under pressure, through a balanced valve, which is operated from the car by means of a wire hand rope or rod. The plunger and car are forced upward by pressure of the water, which continues to enter the cylinder until the valve is closed, when the car comes to a stop. It is then supported by the column of water confined in the cylinder. Upon reversing the valve, the water is gradually discharged, and the car and plunger slowly descend by the force of gravity. It is seen that herein lies the safety of this style of elevator, because it is impossible for the car to descend any faster than the water is displaced by the plunger and discharged from the cylinder through the single small orifice which admitted it.

In locations where the pressure of the city water is too low or the rates too high, it is often found advisable to pump the discharged water either into a gravity tank at the top of the building or a direct pressure tank in the basement, whence it is again supplied to the cylinder. The makers consider the latter method much the preferable, as it dispenses with a long, double line of piping and danger of leakage and freezing.



THE TITAN HYDRAULIC ELEVATOR, AS USED IN FOUNDRIES.

The valve is so constructed as to prevent pounding of the water and sudden jerking of the car; it is closed automatically as the car reaches the upper or lower landing. Its packing, as well as that of the elevator cylinder, can be easily replaced when worn out. The cars are framed of hard wood, braced with iron and finished as desired.

The accompanying illustration represents the elevator adapted for lifting the pig iron and fuel to the charging platform of a cupola. It is well adapted for this purpose, as it will raise heavy loads, is not affected by heat and dust, occupies but little space, cannot fall, and is very easily operated. If desired, charging scales can be placed on the elevator so the stock can be weighed while being raised. These elevators have recently been erected in the foundries of the following well known concerns: Farrel Foundry and Machine Company, Ansonia, Conn.; Chattanooga Foundry and Pipe Works, Bridgeport, Ala.; the Pratt & Whitney Company, Hartford, Conn.; the Pratt & Cady Company, Hartford, Conn.; the Springfield Emery Wheel Mfg. Company, Bridgeport, Conn., and the H. B. Smith Company, Westfield, Mass.

German Basic Open-Hearth Practice.*

The manufacture of ingot iron in the open hearth furnace is generally conducted in Germany by the Martin process, according to which pig iron is decarbonized by malleable scrap—commonly the crop ends and rejections of the mill's own production. Ore or hammer scale is employed only in small measure, usually as auxiliary to complete the decarbonization. The regular pig and ore or Siemens process, if used at all, finds application only in isolated cases and to a very small extent. Equally limited in its introduction has been the practice of blowing air into the metal. The special and, as it proved, perfectly practicable apparatus which was used for some time in the Phœnix Works at Ruhrort has since been abandoned because economic advantages for it could not be demonstrated. The process is as frequently acid as basic. The latter method, however, is continually gaining ground, and it is especially interesting to observe that such works in particular as aim only at small output, or have but small quantities of scrap to work up, prefer the basic process. To such extent, indeed, is this true, that even in ordinary machine shops and foundries 1.5 to 2-ton open hearths are found in successful operation.

At the present day all furnaces for acid as well as basic working are designed with a high roof—a silent recognition of Frederic Siemens' principle of free-flame development, The regenerators are set below the general floor level, but with free space between them and the bottom plates of the hearth; less frequently they are placed horizontally in front of the furnace, and in a few cases, as at Phœnix, they are of cylindrical design, standing independently. The substitution for checkerwork of flues as used in blast furnace stoves is steadily gaining favor.

The hearth bottom is commonly prepared with tar dolomite, though in recent practice calcined magnesite, dolomite or limestone, with milk of lime of dolomite as binding material, has also been employed. Repairs are made with a paste of tar dolomite. As a rule, both bridge walls are air cooled; water cooling is exceptional. Attempt has been made, and not without encouraging success, to water cool the zone most subject to wear around the furnace at the level where slag comes in contact with the walls. The roof is still made in all cases of silica brick, and a mixture of chrome iron ore and tar generally serves to separate it from the basic hearth. Pure magnesite brick or a layer of rammed magnesia is used more or less for the same purpose. Entire hearths of magnesia, on the other hand, are uncommon. The light advantages which they may possibly possess over dolomite hearths do not compensate for their high cost in Germany. The roof, as well as the ordinary fire brick walls which carry it, are always specially supported so that no load from the roof is brought upon the hearth or upon the separating layer. The size of the furnaces has steadily grown, though

* From Dr. Hermann Wedding's paper, read before the Pittsburgh International Session, entitled "The Progress of German Practice in the Metallurgy of Iron and Steel Since 1876, with Special Reference to the Basic Processes."

in Germany 15 tons capacity has rarely been exceeded.

As a rule, uncalcined limestone serves for the basic addition; it is charged at the same time with the whole quantity of pig and scrap, the latter being commonly introduced between the two halves of the pig charge. The earlier practice of charging the scrap in several lots is dropping more and more into disuse; indeed, not the slightest disadvantage can be traced to the newer method. Every effort is made to shorten the charging period which, in the case of large charges, occupies much valuable time; at Phœnix, near Ruhrort, for example, the charging consumes two to three hours, during which the first part of the charge already melts. The remedy has been sought either in a greater number of charging doors, with a correspondingly larger force of men, or in the adoption of hydraulic charging machinery.

Before the addition of ferromanganese the slag is drawn only if it carries much phosphorus. If low in phosphorus the relatively thin and diffused cover of slag is not a disadvantage.

Basic open hearth metal is generally regarded as an excellent material, for the reason that it is practicable to make accurate tests during its manufacture, and since ordinarily not more than three or four heats can be run in 24 hours, there is sufficient time for both chemical and mechanical examinations. A by no means unessential cause of the common preference for open hearth iron over converter metal lies in the better opportunity offered by the open hearth for a uniform distribution of the manganese introduced as ferro or spiegel. For the lack of such opportunity much difficulty has heretofore been encountered in producing high carbon metal in the basic converter. We may, therefore, welcome here also as progress the practice introduced and developed at the Phœnix works, in which the bath is deoxidized with a small addition of ferromanganese, and then further carbonized by introducing a stream of pulverized coal. Not only is economy thus effected in the use of expensive ferro, but at the same time the product runs lower in manganese, and is consequently more homogenous.

The following are illustrations of general practice:

Hörde.—The Hörde works have nine regenerative open hearths for the manufacture of ingot iron; six are in constant operation and three are undergoing repairs, warming up, &c. The fuel is water gas. The newer furnaces measure 8 x 3 m., and have a capacity of 15 metric tons, though the charge does not commonly exceed 10 tons. The capacity of the older furnaces is 7 tons. The hearth is made of dolomite, and the sides and roof of silica brick manufactured at the works. The newer furnaces stand 300 to 350 and the older ones 180 to 250 heats. They are run with scrap and about 20 to 25 per cent. of pig. Ore is used (Siemens process) only in small quantities, so far as it may serve to correct the carbon contents of the bath. If the scrap is in convenient form six heats in 24 hours can be made in the newer furnaces. These furnaces are also fitted to combine the Thomas and the Martin processes. For this practice Thomas metal is blown down to 0.3 per cent. phosphorus in the converter, to the limit—that is, at which the second lime addition would have to be made—and no considerable oxidation of iron has yet occurred. The Thomas metal is then conveyed in a ladle to the open hearth and there finished. One furnace can easily make eight to nine such heats in 24 hours, and the Thomas metal is thereby converted into excellent open hearth iron. The choice of this practice depends on the supplies of scrap and on the excess of converter output over rolling mill capacity. The Hörde basic open hearth iron is always apparently of better grade than the converter metal, even when no analytical difference can be detected. The following comparison is to the point:

Thomas iron (converter metal). Heat 265 contained:		Open hearth ingot iron. Heat 202 contained:	
Phosphorus	0.042	Phosphorus	0.046
Manganese	0.595	Manganese	0.580
Carbon	0.135	Carbon	0.137
Sulphur	0.037	Sulphur	0.046

It is to be noted that the basic open hearth process removes little or no sulphur, so that its product averages relatively more sulphur than does converter metal, as the following figures taken at random from open hearth heats will show:

Heat No.	Sulphur. Per cent.	Phosphorus. Per cent.
48	0.078	0.049
51	0.062	0.047
75	0.066	0.051
84	0.044	0.045
88	0.049	0.031

This as yet unexplained action is further illustrated by the following samples taken from one heat:

Heat No. 954, *August* 25, 1888.

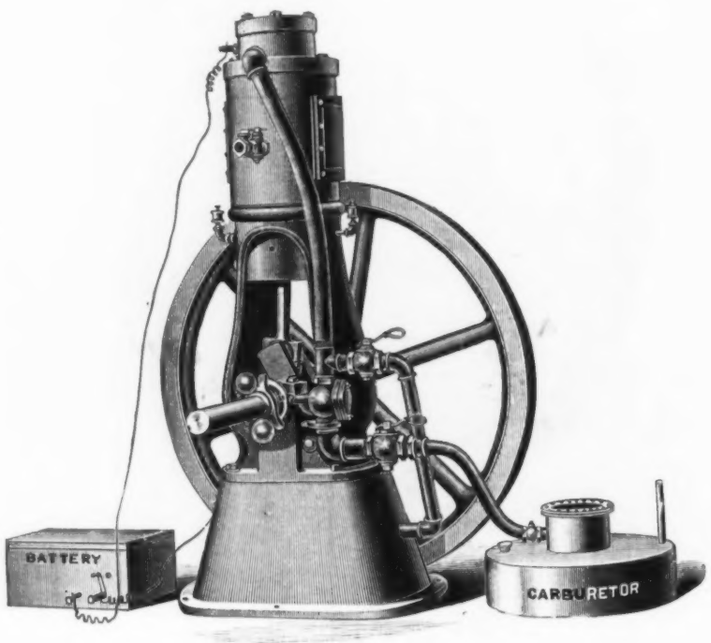
Sample.	Phosphorus. Per cent.	Carbon. Per cent.	Manganese. Per cent.	Sulphur. Per cent.
1	0.084	0.242	0.62	0.067
2	0.089	0.246	0.72	0.066
3	0.062	0.227	0.59	0.067
4	0.079	0.215	0.66	0.072
5	0.064	0.167	0.39	0.079
6	0.067	0.137	0.39	0.069
7	0.056	0.135	0.47	0.070
8	0.050	0.132	0.41	0.076
Steel sample.	0.078	0.154	0.36	0.087

Apparently open hearth ingot iron is less affected by sulphur in its physical qualities than converter metal. The effort to explain the difference of the two metals in behavior by a difference in specific gravity has failed, the two kinds of ingot iron having been found to possess exactly the same specific gravity.

Phœnix.—The open hearth works for ingot iron manufacture at Phœnix consist of an old plant of four 10-ton furnaces and a new one of two 20-ton furnaces. All the furnaces are basic lined, and work up all the scrap made in the works, as well as malleable scrap of all kinds. The output amounts to 3200 tons per month. All grades of metal, ranging from 0.6 to 0.9 per cent. carbon, are produced and principally turned into tires, axles and high grade plate and merchant iron. Recently the furnaces have been supplied with gas from 10 fan blown cupola producers, measuring 1650 mm. in inside diameter and 2.8 mm. above the grate.

The Regan Vapor Engine.

During the past two years a new type of gas engine, known as the Regan vapor engine, has been introduced extensively in California. This engine is now manufactured by Thomas Kane & Co. of Chicago, Ill. No fire is used about the engine, the charge being ignited in the cylinder by a spark from an ordinary wet or dry battery. This construction does away with all fire risk and permits the placing of the engine in any desired location. While gas can be used for fuel, the engine runs as well on gasoline.



THE REGAN VAPOR ENGINE.

It is operated by means of vapor drawn into the cylinder by the suction of the piston, and ignited by an electric spark, as follows: The carburetor, as shown in the illustration, contains a small quantity of gasoline, and is connected with the engine by a pipe. At each revolution of the fly-wheel a current of cool air is drawn through the carburetor and into the cylinder. In passing through the carburetor it vaporizes a quantity of the gasoline; this, when mixed with more air drawn through the pipe and air valve, forms the charge which, upon combustion, develops the power. This charge, as already stated, is drawn into the cylinder as the piston is drawn out by the crank and fly-wheel; on the return stroke it is compressed in the head of the cylinder, and just before the piston arrives at its highest point, or "upper dead center," a shoulder or point projecting from it (which is an electrode) comes in contact with a flexible piece (also an electrode), the two comprising the poles of the small battery, thus completing an electric circuit which is broken just as the piston has passed its "center" and commences to descend. At the instant the electrodes separate the spark is emitted, firing the charge. On every other stroke of the piston this is repeated automatically, save when the supply is

"cut off" by the governor, which not only controls the engine, but at the same time "cuts off" the supply of gas, so that when less power is being used proportionately less gas is consumed. The engine is built both upright and horizontal, from ⅓ horse-power upward, both for stationary and marine purposes.

New Buffing Wheel.

A buffing wheel of new and novel design, adapted to all purposes that polishing wheels are used for—roughing, fining down, greasing, coloring and buffing—has just been placed on the market by the Compress Polishing Wheel Company of Chicago. The drawings show the form and method of constructing the wheel. The rim is formed of any material—leather, felt, paper, chamois skin, rawhide, canvas, wood fiber, or any other material suitable for polishing—laid in sections, vertically, side by side, and subjected to mechanical compression, making a wheel of equal density and staying power. Figs. 2 and 3 show how the leather or other covering is placed on the wheel and held by compression of the inner side of the covering next the wheel, so exerted as to compact the under sides or edges of the material used to a density that insures its wearing evenly clear down to the rim of the wheel. When the material is worn out it can be replaced at a small cost, thereby saving the expense of a new wheel. The buffing surface can be made of any shape desired. No glue is used in the construction of this wheel, which is perfectly balanced. It can be washed without injury. It is claimed that these wheels are superior to anything heretofore produced for rapidity of execution, ease of management, accuracy, durability and safety.

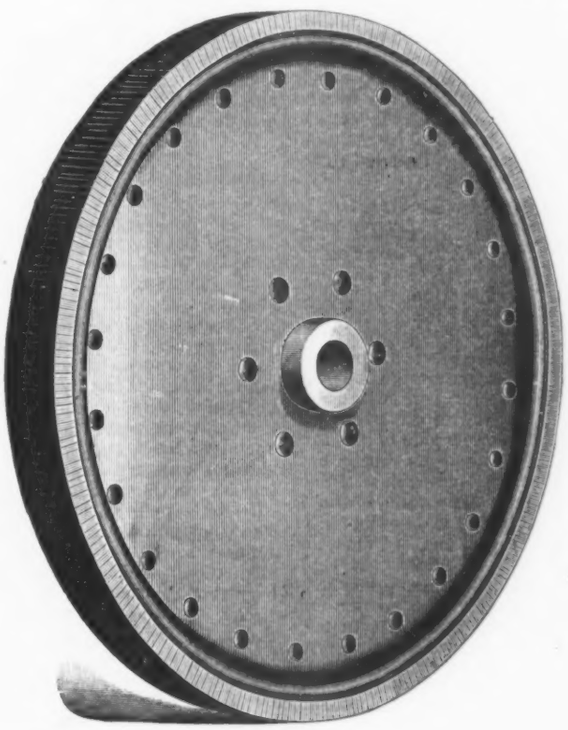


Fig. 1.

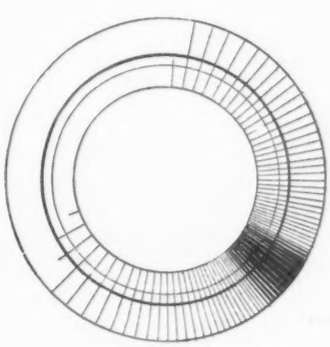


Fig. 2.

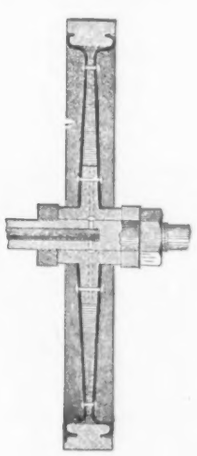


Fig. 3.

BUFFING WHEEL.

Proposals have been invited by Bernard R. Green, superintendent and engineer of the new Congressional Library building, Washington, D. C., for furnishing, delivering and putting in place the cast iron frames, casings and trimmings for doors, windows, and washboards, in the new library building. The bids are to be opened on February 4, at 2 o'clock p.m.

New York Tunnel Schemes.

For over 20 years New York City has been the center of tunnel schemes. The first attempt of any importance and upon which any real work was done was the underground road starting at the corner of Broadway and Warren street, and intended to run under Broadway. This was initiated by and all the work done was after plans designed by A. E. Beach, editor of the *Scientific American*. It was in this work that the first use of a shield propelled by hydraulic jacks was practically tested. The shields which have since been used, notably the one employed under the St. Clair River in the tunnel recently completed, and in the Hudson River Tunnel, work on which is now progressing favorably, are modifications of this idea, the principle of construction and the method of operation remaining unchanged. It is fair to assume that in this project Mr. Beach was in advance of the times, since, although in the construction of 200 or 300 feet of tunnel he demonstrated the feasibility of his plans, the city was not then in such a condition as regarded the uptown distribution of its inhabitants to look favorably upon a scheme of this character. Afterward the completion of the elevated roads was thought to fully solve the problem of the transportation of passengers up and down town. Following this there have been many plans for underground railroads in New York, particularly one which proposed to use the entire surface of Broadway, providing for quick and slow traffic by means of four tracks. Numerous other plans have been brought forward, but none has as yet advanced further than paper.

THE HUDSON RIVER TUNNEL.

The next undertaking which advanced further than the drawings was brought forward by Col. D. C. Haskin to tunnel the Hudson River. Work was begun some 13 years ago, and since then has been carried forward more or less erratically, according to the financial condition of the company. Some months since English engineers and capitalists, at whose head were Sir Benjamin Baker and Sir John Fowler, took hold of the undertaking, and since their advent the work has been progressing most satisfactorily. The first work here done was of the utmost importance, since it introduced and proved the practicability of running a subaqueous horizontal tunnel through soft material by means of compressed air. The most important fact demonstrated was that the soft silt forming the bed of the Hudson River had sufficient tenacity in itself to act as a wall dividing the air from the water.

The first work done has been so frequently described that it is unnecessary to enter into details. A shaft was first sunk on the New Jersey shore to the depth of about 56 feet below high tide, and from the center of the river wall of this shaft an opening was made, and a temporary tunnel started. The temporary tunnel at the shaft terminated in an air lock similar to those now employed in the bulkheads, and gradually flared in steps so that its longitudinal section was cone-shaped until its outer diameter was 22 feet. From the end of this cone or temporary tunnel the two main brick tunnels were begun. Afterward this work was removed and two tunnels continued to the shaft.

In carrying forward the work the heading was formed into steps or terraces in which the men stood, and the excavation was carried on at all points of the face. As fast as the heading advanced iron plates ¼ inch thick, and bent to correspond with the curve of the tunnel and flanged upon the four edges, were inserted to form rings, and as soon as a sec-

tion of 8 or 10 feet had been lined, it was bricked. In this work no attempt whatever was made to protect the silt heading by means of bracing. It was found, as stated above, to be sufficiently tenacious and homogeneous to prevent the escape of air or the entrance of water. The air pressure was kept about equal to the hydrostatic head, and of course was increased as the tunel advanced under the river. It was a most difficult matter to keep the tunnel to grade, owing to the fact that it was impossible to exactly calculate the amount of settlement that would take place in a section after the masonry work had been completed, slight changes in the density of the silt influencing the amount of settlement, and as this could not be calculated by any degree of certainty, it was impossible to provide for it. In order, therefore, to keep the tunnel to grade, and as a secondary consideration to ascertain the character of the material in advance of the heading, the so-called pilot tunnel was introduced by John F. Anderson. This pilot tunnel was 6 feet in diameter, made up of interchangable plates, flanged so that they could be bolted together, and formed a central hub which extended a few feet into the silt in advance of the face, and also a few feet into the completed masonry of the tunnel. Being supported rigidly at both ends, the central portion of this pilot acted as a foundation upon which struts to support the plates could be placed. It was found that this pilot answered every purpose, and that its use permitted the keeping of the tunnel to the proper line.

THE AIR LOCKS.

Placed at intervals along the tunnel, as the work was completed, were brick bulkheads, in which about a third from the top were inserted air locks 15 feet long, 6 feet in diameter, and provided at each end with a 3 x 4 foot door, of course opening toward the heading. The use of these air locks has been continued until the present time. They are placed about 300 feet apart, the rear one being taken away and advanced as the work advanced. There are now in use three locks, the further one being over 2000 feet from shore. Any one entering the tunnel passes into the air lock, when the rear door is closed. Air is then admitted, and after the pressure in the lock has become equal to that on the heading side of the lock, the inside door is opened and the visitor passes into the first section of the tunnel, being then under a pressure of about 15 pounds to the square inch. The next lock, at about 1800 feet from the shaft, is then entered and a slightly increased pressure found in the second section of the work. The third lock is then passed through, and the visitor finds himself in the heading section under a pressure of about 35 pounds to the inch.

THE SHIELD.

If a tube, say 4 inches in diameter and 1 foot long, be made of pasteboard and one end closed with a pasteboard cap and the other end closed with a sheet of tissue paper, it is evident that this cylinder can be submerged in water to any depth, provided a pressure be maintained in the interior equal to the hydrostatic head. In other words, the tissue paper diaphragm, as long as an equilibrium is maintained between the air and water pressure, will serve every purpose of a dividing or separating wall equally as well as the stronger pasteboard diaphragm at the other end. It was this principle which was utilized in the first work of the tunnel. If, now, in place of the tissue paper diaphragm a cap be substituted which is free to move longitudinally over the outside end of the cylinder, and which is about 2 inches in length, a good representation is obtained of the steel shield which is now used in advancing the head. Presuming the joint between this pasteboard cap and the pasteboard cylinder to be air tight, it is evident that the cap can be moved forward or away from the cylinder a short distance without interfering with its duties as a cap. The steel shield in the tunnel is 20 feet in diameter, 10 feet long, divided in the center by a steel diaphragm, provided with nine openings about 2 feet square. This shield corresponds to the pasteboard cap on the cylinder. It is pushed forward by 16 20-ton hydraulic jacks, the cylinders of which are secured in the rim of the shield and the plungers of which find a bearing against the completed work of the tunnel. As the shield is forced forward by the jacks the silt squeezes through each of the nine openings, falls to the bottom of the excavation, is loaded upon a car, run back a short distance, elevated about 12 feet by means of a hydraulic elevator, and then run on tracks up the tunnel, through the locks to the shaft, when it is raised by a second elevator to the surface and carried to the dumping ground.

INSERTING THE PLATES.

After a shield has advanced a space sufficient to permit of the erection of a ring of plates it is stopped and a ring inserted. The ring consists of heavy cast iron flanged plates, 20 inches wide, and varying in weight from 1100 to 75 pounds, the key plate being the smallest These plates are handled by means of an erector carried upon a bridge beam traveling upon tracks secured to brackets at each side of the tunnel, so that the beam and its erector arm can be moved forward and back as the occasion may demand. The erector arm is mounted upon a shaft placed at the center of the bridge, and also has, by means of hydraulic cylinders, a motion at right angles to the shaft. It is therefore evident that the grasping end of the erector arm can be brought down and made to take hold of the plate lying on the bottom; can then be raised, turned on its shaft so as to bring the plate in position. and to hold it until it has been securely bolted to the ring of plates already in place. It will be seen that this method varies materially from that formerly proposed. In the first place, thin plates were used, which were afterward lined with masonry. In this case heavy cast iron flanged plates are used, which, it is expected, will not be lined except at the bottom, and for a certain distance, probably half way up the sides, the strength of the cast iron plates being calculated to be sufficient to stand the pressure which will come upon them when the air is removed. The work has progressed most satisfactorily, and the heading of the north tunnel is now about 2400 feet from the shaft on the New Jersey side, or nearly half way across, the whole distance being 5600 feet. The south tunnel, which of course runs parallel with the north tunnel, and a few feet from it, is finished for a distance of about 600 feet. At the New York end, instead of sinking a shaft a caisson was sunk, and from the river side of this the two tunnels started. No work has as yet been done on the New York side since the new management took hold, although a shield is now ready to be put in place, and the work is in such condition that it can be resumed at any time. The south tunnel here has been extended about 20 feet and the north tunnel about 180 feet.

PROJECTED EAST RIVER TUNNEL.

Another tunnel scheme which, it seems probable, will be carried through, is that by the New York and Long Island Railroad Company, who intend building a tunnel under the East River from Long Island City to New York. All legal difficulties have been overcome and nothing now remains to interfere with the project. The terminus of the tunnel on this side is to be at West Forty-second street and Tenth avenue, and at Thompson avenue, near Dutch Kills, in Long Island City. At the first named point there will be a connection with the freight tracks of the New York Central and at the other point with the Long Island Railroad. Other branches will probably extend to other points in the city. It is believed, because of the results of borings made along the line of the tunnel, that all the work can be prosecuted in solid rock, and that at all points sufficient head room can be found so as to do away with the requirements of any masonry work. The length of the tunnel under the river will be nearly half a mile. It is expected that this method, when completed, will do away with the trouble now experienced in crossing the East River, and that other advantages may be looked forward to if the shipping interest at Montauk, the upper end of Long Island, ever develops.

Fighting the Harvester Combine.

A press dispatch from St. Louis says: Indications are that the great harvester combine is not to have an altogether clear field. The Farmers' Alliance of Missouri is taking steps to compete, by co-operative manufacturing, with the $35,000,000 Consolidated American Harvester Company. A movement is now on foot to establish a binder factory in this State, the necessary capital to be raised by subscription and the plant to be run on a co-operative basis, supplying the great agricultural territory immediately surrounding it. In this the farmers will undoubtedly be supported by the labor element. The wholesale discharge of 10,000 men on January 1 will, it is said, be followed immediately by crystallization of the anti-harvester combine movement in alliance circles. It was also learned to-day that Frank W. Terpening, St. Louis, manager for D. M. Osborne & Co., and a gentleman named Timmerman, formerly Chicago, manager for the same firm, and a very wealthy man, have organized a new company to fight the trust. The company is to be known as the St. Louis Harvester Company, and the works and offices are to be located here. Both the gentlemen mentioned have large means, and can secure all the capital they want besides. Their plan is to employ all the best men who will be let out by the trust, and to buy up the warehouses of the different companies which have gone into the combine. For instance, the warehouse of D. M. Osborne & Co., in St. Louis, is to be bought and turned into a harvester factory. The St. Louis Harvester Company people say that there are a number of patents and new devices that are great improvements over those at present used by the companies forming the combine, and the new company will put them on their machines.

The combination of triple expansion engines and twin screws has accelerated speed in steamship navigation until now the question is asked, whether the maximum has not already been reached, at least so far as it can be reconciled with commercial success. Up to the present time the increasing size of steamships has permitted corresponding increase of space for passengers and freight, thus reimbursing the greater cost of running.

A review of the manufacturing industries of Erie, Pa., for the year shows that the output in the line of engines, boilers, sawmills and brass and wood work foots up $25,000,000, a large excess over the previous year. The shops are running overtime, and have orders enough on hand to run half a year.

Drill and Auger Bit Chuck.

This chuck can be made to accommodate any size drill or bit used. It does not require either a wrench, key, spanner or drift to fasten or loosen the bits, and will hold the bit as rigid as if fastened with a screw. There is no projection on the outside of the chuck, and the drill can be removed from the socket while the machine is in motion. The accompanying engravings clearly show the construction of the chuck, which is made by M. L. Andrew of Cincinnati, Ohio. By screwing up on the cap nut C the hardened steel flaring ring B is forced on the hardened steel key A, which in turn is forced down on the shank of the drill D, which is thereby held rigidly. Fig. 2 shows the spindle of a wood boring machine provided with a steel tongued brush or sleeve that is inserted and used as a reducer for smaller shanks.

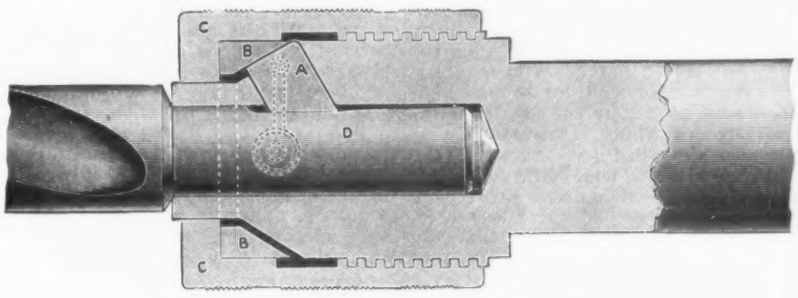


Fig. 1.—Spindle of Drill Press Fitted with Chuck.

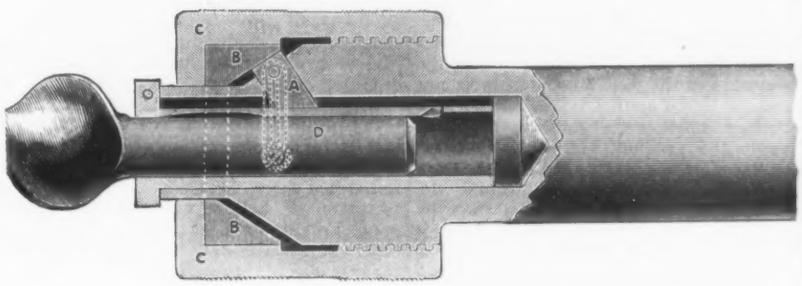


Fig. 2.—Spindle of Wood Boring Machine Fitted with Chuck.

DRILL AND AUGER BIT CHUCK.

The Hoppes Mfg. Company of Springfield, Ohio, manufacturers of the Hoppes Live Steam Feed Water Purifier and Exhaust Steam Feed Water Heater, have brought an interference suit before the Commissioner of Patents against the Stilwell & Bierce Mfg. Company of Dayton, Ohio. The patent in question is on a method of connecting live steam feed water purifiers in such a manner that the air and gases will be circulated out of the purifier through the pump. The Hoppes Company claim to own the original patent on these connections, which was granted to J. H. Berkshire, February 19, 1884, and the patent in question is on a specific modification invented by J. J. Hoppes, president of the company.

Treasury officials at Washington are said to have received information that the Government has been defrauded by consular agents on the Canadian frontier to a large amount by exacting illegal fees and by undervaluations. It is stated that consular certificates in blank, signed by the consuls and the consular agents, have been sold for a nominal sum for the use of exporters in making false returns of value on goods sent to the United States.

The Illinois Steel Company.

The Illinois Steel Company have suspended operations in all their rail mills. Resumption will depend upon the condition of the rail trade, the volume of business at present being too light to enable the mills to run regularly. The Joliet mill is idle, on account of the blooming mill engine breaking down, but it will soon be repaired. The Joliet rod mill is running, having had a good supply of billets rolled before the stoppage of the blooming mill. The Milwaukee works are in full operation in every department and turning out the largest product in the history of the plant. With these works 1890 was the banner year. Of the 19 blast furnaces owned by the Illinois Steel Company 12 are now in blast and 7 are out of blast. Included in the latter are the four new furnaces at South Chicago, which have been completed but not yet blown in. The reports which have appeared at various times that the company have open-hearth steel works and a plate mill well under construction at South Chicago are incorrect. The ground has been prepared for the plant, but nothing more has been done, not even the foundations being laid. The depression in the steel rail trade, which has caused the shutting down of the company's rail mills, is the most severe since that of 1888. In October of that year the Union Works shut down and were not started again until the following June. The Joliet Works were also idle during the winter of 1888–9, but the South Chicago Works succeeded in securing enough orders to keep the mill running, although not up to full capacity. In June, 1889, orders began to flow in, and it was soon found necessary to put even the North works on rails to meet the demand, which continued unabated from that time until this winter.

SHEET ROLLING.

THREE-HIGH VERSUS TWO-HIGH TRAINS.

R. M. Daelen, of Duesseldorf, the leading roll mill designer of Germany, has lately reviewed in a very interesting manner the limitations, advantages and drawbacks of three high trains in sheet rolling. The article in question is published in the *Zeitschrift des Vereins Deutscher Ingenieure*, and is accompanied by drawings of the Lauth train. In rolling bars on a three-high train the middle roll generally has a fixed bearing, so that it takes the pressure alternately above and below. But with sheet rolls their diameter must be made large, so that there is not room enough to give the bearings sufficient strength. This led Lauth to the idea of so arranging the middle roll that it touches the upper and the lower roll alternately, so that their bearings alone take the pressure. This made it possible to make the diameter of the middle roll smaller than that of the others, and incidentally lessened the hight to which the material to be rolled had to be lifted. Herr Daelen questions whether there are any other advantages in practice, because the wear of the surface is greater as the diameter of the rolls decreases. The uneven extension of the material between two rolls differing in diameter cannot be considered advantageous under all circumstances, many rolling mill men being convinced of the contrary so far as working steel is concerned. These reasons have led to the abandonment of the Lauth three-high train for the manufacture of high grade boiler plates, or have led to a modification of the design by making the middle roll as large as the others. Daelen cites at the largest Lauth mill for heavy gauge plates on the Continent, a mill bearing 900 mm. (35.4-inch), and 450 mm. (17.7-inch) rolls, 3400 mm. (134 inches) wide. The middle roll is mechanically raised and lowered after every pass, an arrangement which is used generally, with the exception of fine sheet mills, and even with them it might prove advantageous, because it prevents the shock which otherwise occurs when the sheet enters between the lower and middle roll. Latterly universal mills have been successfully introduced in the Lauth system, in which cases it is generally sufficient to place the vertical rolls only on one side of the housings. Daelen examines in detail the working of a mill having the following dimensions:

Length of rolls.....	..1500 mm. (59.0 inch.)
Diameter of upper and lower rolls.....	600 mm. (23.6 inch.)
Diameter of middle roll..	400 mm. (15.7 inch.)
Diameter of bearing, upper and lower rolls.....	400 mm. (15.7 inch.)
Diameter of bearing, middle roll....	280 mm. (11.0 inch.)
Length of bearings.....	340 mm. (13.4 inch.)

Assuming that the middle and upper rolls are driven by the lower roll, the maximum distance between the axis of the upper and lower rolls is 300 + 400 + 300 + 25 mm., equal to 1025 mm. (40.4 inches). Experience has taught that slabs thicker than 25 mm. (0.1 inch) are not carried through.

Taking specific data, let it be assumed that sheets 1200 mm. (47 inches) wide, and 1 mm. (0.039 inch) gauge are to be rolled. The slabs, with a maximum thickness of 25 mm., the usual width of 132 mm., and 1230 mm. length, would weigh 36.4 kg. Counting 20 per cent. for waste and shearing, the weight of the sheet is 29.1 kg., which for a width of 1200 mm., and 1 mm. of gauge, makes the length 3110 mm. This, therefore, defines the maximum size for such a train.

The pressure obtained by the spindle by one revolution of the wheel depends upon the character of the gearing and the pitch of the screw. If the latter be 35 mm., and the number of teeth in the equal gears is 48, then the pressure for each tooth is 0.73 mm. Considering the low heat at which sheets must be rolled in order to avoid defects, and considering the fact that the temperature decreases after every pass, a pressure of about 18 per cent. of the thickness of the slab may be used for the first two passes, and the same amount calculated on the actual thickness, as it gradually decreases on the following passes :

Taking an example, Daelen calculates as follows : Let it be assumed that two slabs are worked simultaneously, as is usually the case, and that the articles to be rolled are 1000 x 2000 x 0.50 mm. sheets, and that the slabs are 1040 mm. long, 152 mm. wide and 7.5 mm. thick. For the first pass between the lower and the middle roll the pressure is 75 × 0.18 = 1.35 mm. The spindle must, therefore, be opened so far that there is a space of 7.5 — 1.35 mm., or 6.15 mm.; in other words $\frac{6.15}{0.73} = 8\frac{1}{2}$ teeth. In the same manner, the other pressures are calculated as follows :

	Below.	Above.
First pass	1.35 mm.	0.36 mm.
Second pass	1.46 mm.	....
Third pass	1.10 mm.	0.36 mm.
Fourth pass	1.10 mm.	0.36 mm.
Fifth pass	0.73 mm.	....

In these five passes each slab is allowed to go through alone. These pressures together amount to 1.35 + 0.36 + 1.46 + 1.10 + 0.36 + 1.10 + 0.36 + 0.73 = 6.82 mm. As the slab was originally 7.5 mm. thick, this would leave 7.5 — 6.82 = 0.68 mm. In reality, it will be 3 mm., or four times the calculated thickness. This is due to the fact that since the slab resists the pressure the spindle turns back about half a tooth on average, receding more during the first two passes and less in proportion to the gradually lessening thickness of the slab. The actual pressure is less than the theoretical pressure by about 6 per cent.

The plates, now rolled down to 3 mm. gauge, are doubled so that their aggregate thickness is now 6 mm. They are rolled in the same heat. Since they are pretty cold, the pressure is reduced to 15 per cent., or 0.90 mm. Therefore the pressure of the first pass is 6.0 — 5.11 = 0.89 mm., the succeeding passes being calculated as follows:

	Below. mm.	Above. mm.
First pass	0.89	....
Second pass	0.73	0.37
Third pass	0.73	....
Fourth pass	0.73	....
Fifth pass	0.36	....
Sixth pass	0.36	....
Seventh pass	0.36	....
Total	4.16	0.37
	0.37	
	4.53	

This would leave a thickness, theoretically, of 6.0 — 4.53 mm., or 1.47 mm., for both. For reasons already stated the thickness of the two sheets is really 3 mm., or 1.5 mm. each. For this gauge the sheets have reached a length of 600 mm., and are turned over to a two-high train for finishing. It is not advisable to place three or more together and attempt to roll them out, because there is danger of their buckling and of the production of defective sheets either during this rolling or during the subsequent finishing.

The capacity of such a three high train is very large. In order to reach a comparison Daelen makes assumptions which define the relative capacity of three-high and two-high trains. Since the former can roll down to 1.5 mm. (0.047 inch) gauge, let it be assumed that higher gauge sheets are to be produced. The three-high train, in such a case, needs two finishing trains, since its product cannot be finished in one set in the same time, in rolling fine sheets. These three sets call for a 100 to 120 horse-power engine, while the two-high train, with one finishing set, needs only 80 horse-power. The speed is about 50 revolutions per minute in both cases, and the crew in both cases is one roller, one helper, one man at the spindle, one boy, one heater, and, under certain circumstances, one doubler. This crew can roll in a 12-hour turn, on a three-high train and two heating furnaces of the ordinary design, 6 to 7 metric tons of slabs, averaging 10 kg., or 600 to 700 in all. Counting two hours' time lost, the capacity is 60 to 70 per hour. A two-high train can only handle 40, or two-thirds but even this capacity is possible only for certain gauges. As soon as the roughing has been done, the difference between the two systems appears, since the finishing work differs considerably. On a two-high train the same crew which has done the roughing does the finishing, while for the three-high there must be at least one extra crew exclusively on finishing; at least two heating furnaces are called for. As soon as the finishing becomes more difficult, on account of the doubling, and needs more care in heating, as it does for larger sheets and smaller gauges—for instance, on 650 x 1300 x 0.55 mm. size—then one crew cannot finish as quickly as the material is delivered by the roughing, and the latter is naturally reduced in capacity. This relation between roughing and finishing becomes more disadvantageous with one crew on a two-high train as the gauge of the sheets grows smaller. The work on the three-high train is not influenced, since the second crew takes the product, and the work on the train is not hampered. Of course it is quite another question whether the finishing crew can handle the product. If it accumulates, matters must be so arranged that the train is given work of a character which the finishers can put through faster than the roughers. This is rarely possible, and it has been assumed, therefore, that one three-high train calls for two finishing trains, with their two crews and four heating furnaces. The advantage of the three-high system does not therefore lie in the system itself, but in the organization of labor which it involves. Three crews working on two-high trains will turn out at least as much. But the number of sets must be six, or double that of the three-high system, which involves increased power, a greater quantity of lubricants and greater attendance.

Thus the examination leads to peculiar results so far as the manufacture of thin sheets is concerned. The finishing work predominates to such a degree that the value of rapid roughing is nearly lost. With two-high trains it is necessarily hampered; with the three-high system so many additional crews are called for that the finishing work sacrifices the advantages gained in roughing. In rolling thin sheets, therefore, the advantage of three-high work does not consist in increasing the production, but in economy of power, of materials, in labor and in capital account and interest.

A full utilization of the three-high system, which is kept in narrow bounds by the plan of carrying along the middle and upper rolls by friction, seems attainable only by driving the upper roll by gearing. If the teeth are made long slabs up to 60 mm (2.36 inches) may be rolled. With rolls 1500 mm. long sheets trimming down to 1400 mm. may be easily rolled. The slabs are made 1450 mm. long, and with a width of 152 mm. and 60 mm. thick they weigh 103 kg. apiece. The trimmed sheet rolled from it weighs about 88 kg., and with a length of 4000 mm. is 2 mm. thick (0.079 inch).

Another consideration makes it desirable to drive the upper roll. When only the lower roll is driven, and the other two are operated by friction, the latter should theoretically develop along the whole line of contact As a matter of fact, however, the lower and middle rolls wear quite rapidly, especially in the center. This drawback is felt more with short rolls, and the result is that the friction decreases and that the middle roll develops a tendency to stand still, so that the slab does not go through the pass between the middle and the upper roll. The result has been that in practice long rolls have superseded short ones in three-high trains, even if the width of the sheets to be rolled does not require it. It might be possible to attain the same end by enlarging the middle roll, but that would partly sacrifice the chief advantage of the system—its ability to roll rapidly. Thus the smaller of two evils has been chosen and 1200 mm. has become the minimum width of rolls, even for narrow sheets. An effort has been made to resist the rapid wear of the rolls by allowing water to flow upon them during rolling, thus loosening the scale from the sheets. But this has the disadvantage of rapidly cooling the slabs and diminishing the speed of rolling. Thus, it would appear that every effort to adapt the three-high system to thin sheets, which are usually narrow and short, is met by drawbacks. When the three-high train is arranged with driven upper roll for thin sheets, the disadvantages alluded to disappear. But with a train so arranged it is not possible to roll down below 3 mm., because the gears touch. For the finishing of thin sheets, however, roughing down to 3 mm. possesses only doubtful value, because doubling cannot begin.

In this review thus far Daelen has not taken into consideration the most important point in the manufacture of thin sheets—the uniformity of gauge of any individual sheet. Specifications of manufacturers of hollow ware and stamped goods provide for a maximum variation of 5 per cent. above and below. The slabs for thin sheets are roughed down as far as possible, down to ½ mm., and then doubling is resorted to, once, twice or three times. After every doubling they are reheated. In order to obtain a product of uniform gauge, the product of the roughing must be as uniform as possible. Daelen holds that the three-high trains yield a product which very often does not come up to this requirement, and at times produces a large quantity of seconds.

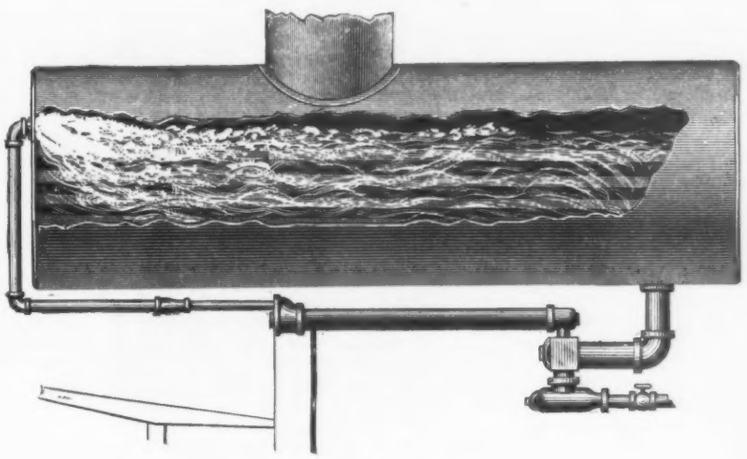
When well conducted, rolling on two-high trains will allow of bringing down the wasters to 4 per cent., even with thin sheets. For sheets under 0.5 mm. three-high trains are not well adapted and certainly make three and even four times the amount of wasters. Daelen, therefore, concludes that the Lauth system is not suitable for thin sheets.

The Labor Laws of Massachusetts.—The labor laws of Massachusetts have been collected and published by the Bureau of Labor Statistics. We get an instructive view from this compilation of how old theories about the relation of the State to industry have been modified in the last 20 or 30 years, and step by step the State has come to interfere in behalf of the laborer The employment of women and minors is now regulated and bounded by certain hours and conditions, child labor is forbidden, minors under 18 cannot be legally employed over 60 hours a week, imprisonment for debt is abolished, the workingman is given a lien on his employer for wages, necessary tools of a mechanic are exempted from attachment,

the trustee process is curtailed, co-operative banks, building societies and associations are authorized, and inspection of factories and regulations for the protection of life and health of the operatives establishsd. Besides, educational facilities have been extended and free text books provided, and, while not the subject of specific legislation, ten hours has come to be the maximum day's work in most industries, and the tendency is still toward a shorter work-day.

The Elmira Steam Generator.

The generator proper consists of a series of pipe flues numbering two or more, according to the size of the boiler or the results required. Each flue is composed of an inner and outer tube, containing between them a space that is always charged with the water of the boiler. These flues commence at the front of the bridge wall and extend rearward, thereby offering no obstruction to the direct action of the fire on the crown plate or other parts of the boiler. This construction gives the boiler additional fire surface (96 square feet, or more, according to the size of boiler)



THE ELMIRA STEAM GENERATOR.

with only a very small additional amount of water. It keeps constantly in the fire a sheet of water over 6 feet square and only ⅝ inch thick, with both sides exposed to the fire, thereby converting the water into steam rapidly, as well as causing a quick circulation. It is stated by the manufacturers of this generator, the Elmira Steam Generator Company of Elmira, N. Y., that its application to boilers in daily use has demonstrated that it secures a large saving of the fuel, while the time required to raise the steam to its full pressure is greatly reduced.

Tin Plate in Bond.—The Treasury Department has written a letter to a New York firm stating that tin plates imported prior to October 1, 1890, and which were contained in bonded warehouses on that date, are not affected by the new tariff law, as section 50 of that act, relating to tin plates, does not go into effect until July 1, 1891. Tin plate imported after July 1, 1891, or which may be in bonded warehouses on that date, will, when entered or withdrawn for consumption, be subject to a duty of 2.10 cents per pound, regardless of the fact whether it had remained in bonded warehouse for more than or less than one year, excepting, however, that it will be subject to three years' limitation prescribed by law, after which it would be liable to sale as abandoned to the Government.

Manual Training School at Providence

The Providence City Council has recently appropriated $70,000 for the erection and equipment of a manual training school. In June, 1889, the school committee received notice of a resolution of the City Council requesting them to inquire into the practicability of introducing a system of industrial training into the public schools. Now the school has practically become an accomplished fact. A lot has been purchased on the north side of Pond street, between Steward and Sumner streets. It has a frontage of 105 feet on Pond street, and is 131½ feet deep. On the east side of the lot is a 12-foot alley, which reaches back to High street. The building is to cost $55,000, and the remaining $15,000 is to be devoted to furnishing a suitable equipment.

The new manual training school will be opened only to boys. About 300 pupils can be accommodated. The curriculum proposed by the Committee of Inquiry embraces five parallel lines of study, as follows: 1, a course in language and literature, including the structure and use of English, composition, literature, history and the elements of civil and political economy; 2, a course in pure mathematics, including arithmethic, algebra, geometry and plane trigonometry; 3, a course in science and applied mathematics, including physical geography, bookkeeping, mensuration, mechanics, physics and chemistry; 4, a course in penmanship, free hand, mechanical and architectural drawing; 5, a course in tool instruction, including carpentry, wood turning and carving, pattern making, forging, molding and casting and bench and machine work in metals.

The building itself, as planned by the architect, Fred. E. Field of Providence, is of brick, with brown stone trimmings, and is four stories in hight. The dimensions of the basement rooms will give an idea of the space allowed for each purpose:

Forge shop	30 x 50 feet
Project room	18 x 20 feet
Power carpenter shop	30 x 50 feet
Lunch room	30 x 30 feet
Machine shop	33 x 47 feet
Boiler house	14 x 17 feet
Engine house	12½ x 17½ feet

There are hot air chambers and store rooms. The heating apparatus is located in the west end of the machine shop. On the first floor there is an office, four school rooms, a library and a large carpenter shop, of the following dimensions:

Office	20 x 30 feet
School rooms (each)	30 x 30 feet
Library	20 x 30 feet

On the second floor are two school rooms, each 30 x 30 feet; an optical room, 20 x 30 feet; physical laboratory, 30 x 30 feet; apparatus room, 8 x 25 feet; chemical laboratory, 30 x 30 feet; museum, 20 x 30 feet; in the rear two drawing rooms, each 23 x 35 feet.

On the third or upper floor is an electrical room, 30 x 30 feet; lecture room, 30 x 37 feet; lecture room, 35 x 47 feet; large assembly hall, 51 x 70 feet, with a stage on the left front of the building. A 25 horse-power engine and a 50 horse-power boiler will form part of the equipment of the building. In the manual training department proper there is an equipment for 24 pupils. The machine room is to be provided with a screw cutting engine and 24 lathes, planers, a power drill, vises and all the tools ordinarily found in such a place. In the forge shop there will be 24 forges and a full set of blacksmiths' tools. The power carpenter shop will have 24 speed lathes for wood turning, a pattern maker's lathe, a band saw, a circular saw and a full set of turning tools for each pupil. The project room is to be devoted to the use of advanced pupils. They will build an engine or dynamo, putting together the work made by the other pupils.

The bench carpenter shop is to be provided with 12 benches, arranged for two pupils each. Each pupil will have a complete set of tools, saws, planes, chisels and similar articles. The laboratories will be furnished in the latest style. The chemical laboratory will probably have 12 tables with slate tops and sinks in the center. There will be receivers for the receipt of work that will give objectionable odors, which will be taken away by an exhaust. Each division of 24 pupils will spend two hours in the shops each day. Ample store rooms for material and general tools are provided for, and each pupil will have the proper tools, which will be charged to him and credited when returned.

The Free Coinage Proposition.—How free coinage, even the discussion of the subject, is calculated to impair confidence in the stability of the monetary standard, is touched upon by the Philadelphia *North American*, which says: "The free coinage of silver is a dishonest proposition, and a dishonest proposition will impair confidence in the business world in the measure of its probable acceptance and formulation in statute law. The Government now coins to the full capacity of the mints, and it could do no more were free coinage ordained Nor, as we understand the demand of free coinage men, does it follow that any more silver would be coined. But under such a law the owner of bullion would present himself with silver, and demand any kind of lawful money for it at the rate of 100 cents for each 371¼ grains of pure silver. As the Government can buy all the silver in the market at the rate of 83 cents for 371¼ grains, it must lose about 17 cents on the dollar on all the silver received under free coinage. An individual cannot long do business at a loss of 17 per cent., nor can a Government, however rich it may be, long maintain public credit at that rate of loss. Lenders would naturally expect borrowers to give their notes for $117 for every $100 borrowed, and that would not make it profitable to speculate on borrowed money. Hence the fear lest the free coinage forces may disintegrate."

The steel steamer Briton was launched on the 30th ult. from the yard of the Globe Iron Works, Cleveland, Ohio, and was the eleventh steamer launched by this company in 1890. The vessel was built for the Menominee Transit Company, and its dimensions are: Length of keel, 296 feet; length over all, 312 feet; beam, 40 feet, and molded depth, 24½ feet.

Sand Molding Machine.

In the accompanying illustration we present a general view of a new sand molding machine, which has been designed by F. G. Leeder, the foundry manager of an important manufacturing concern in Glasgow, Scotland. In this establishment it is stated that there are a number of these machines in active operation, producing very satisfactory results. According to the London *Ironmonger*, from which the following detailed description is taken, the machine is designed to produce a complete mold at one operation and to replace skilled hand labor in making molds from pattern plates. The pattern is formed or fitted partly on the upper and partly on the lower sides of the pattern plate.

The mold is formed in sand contained in two mold boxes, which are placed one over and the other under the pattern plate. The sand is pressed within the mold boxes by the action of hydraulic rams, which also serve, upon the removal of the pattern plate, to eject the sand molds from the boxes. A base piece carries two hydraulic rams, two or more vertical guide rods or pillars, and an entablature or top plate connected to the pillars serves to resist the pressure of the rams when pressing the sand. The hydraulic rams are placed one within the other, and the plunger of the outer one acts as a cylinder for the inner one. The plate on the outer ram head carries the lower mold box. The mold boxes are fitted to slide on the guide rods or pillars, and the pattern plate, which is situated between the upper and lower box, is centered or pivoted on one of the pillars, so that it may be swung out of the way or into position between the boxes. In operation, the lower box is filled with sand while the rams are down and the pattern plate swung out; the latter is then swung into position and the upper box lowered on to it and likewise filled with sand. The rams are then raised by operating upon the lever handles, and the boxes, with pattern plate between, are pressed up against the top plate to ram the sand. The rams are then dropped, the lower box drops with the pattern, while the upper box is retained by a notch or catch, and the pattern plate slips down to its original position and is swung out of the way. The upper box is now lowered, or the lower one may be raised, to bring the parts of the mold together, and the inner ram ejects the sand mold from the boxes ready for casting. The patentee claims the following advantages for the machine, which is made in several sizes. A complete mold is made at one operation in about one-eighth the time taken by hand, while the sand in both halves of the mold being compressed to an equal extent, the castings are much better and truer. No molding boxes are required, other than those on machine, thus saving labor, money and space. The machine is so simple in construction that a lad of 14 can work it after an hour's training, and there are no complicated parts to get out of order. From 400 to 600 complete molds can be made with ease in one of these machines regularly every day. The sole licensees for this machine are the Patent Sand Molding Machine Company, Limited, 95 Bath street, Glasgow, Scotland.

Norton Brothers of Chicago are distributing sample of tin cans made out of tin plate of their own manufacture. Each can bears a statement, handsomely printed in colors, that it is made of the first American tin plate made by Norton Brothers, and it is further decorated by the eagle and and two American flags with crossed poles. The can is interesting in itself as a specimen of the work done by the Norton system of automatic machinery. Another souvenir of this important event in the firm's history is a tin ruler, most artistically decorated and also appropriately labeled.

THE WEEK.

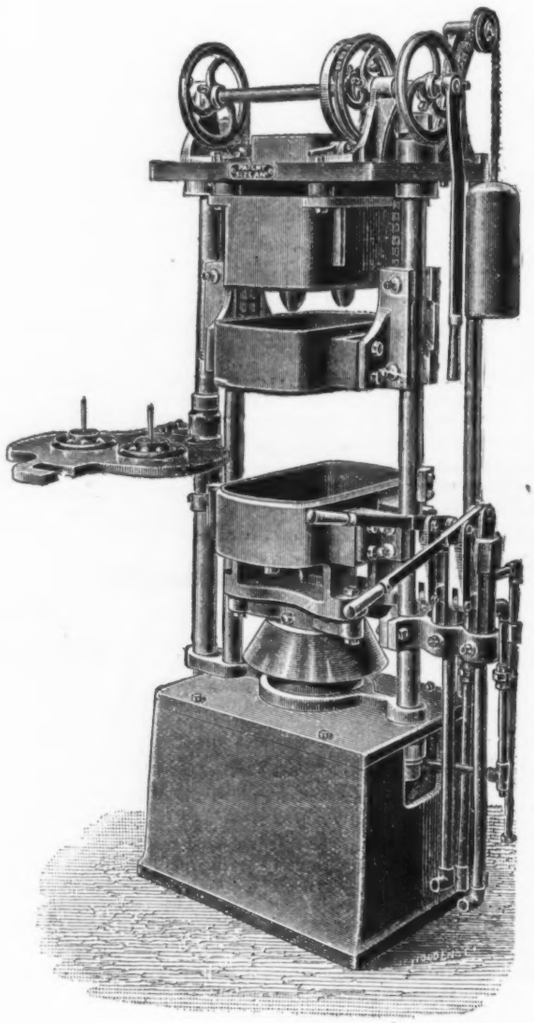
The Mexican Minister at Washington, Señor Romero, has no knowledge of any treaty negotiated between his country and the United States, contrary to report.

Although American flour imported into Cuba must pay a duty of $7.04 per barrel, a leading journal at Madrid contends that it could be imported into Spain direct from the United States and then reimported into Cuba or Porto Rico as Spanish flour and yield large profit to the reimporters.

Last year 250,000 acres in Oregon and Washington were planted in hops, yielding large profits. Hop raising will soon become a leading industry in the West. Already hops have been shipped to Europe.

The champion racers between New York and Liverpool whose exploits during the past season attracted the most attention were the City of Paris and Teutonic. A comparison shows that each crossed the Atlantic 16 times between May and December. The average time of each voyage of the Teutonic according to her log was 6 days, 6 hours and 5 minutes, while that of the City of New York was 6 days, 4 hours and 55 minutes, an average of 1 hour and 10 minutes per voyage quicker than her rival.

Prof. Edward W. Bemis of Nashville, Tenn., read a paper last week before the American Economic Association in Washington City, on "The Municipal Ownership of Gas Works in the United States." The writer held that in cities exceeding 10,000 inhabitants the cost of the entire plant was less than $6 for every thousand feet of gas sold during the year, and from $3 to $5 in most cities of over 50,000. The capitalization, much in excess of this, common in American cities, and sometimes two to four fold, on which dividends were paid, the writer said, revealed the monopoly profits of privately owned gas works.



SAND MOLDING MACHINE.

Statistics of the commerce of Chicago for the past year justify the expectations of those who were looking for a substantial increase. Remarking on the exhibit in detail the Chicago *Tribune* says: "The total trade of the year, as measured on the plan heretofore adopted, aggregates $1,380,000,000, being an increase of 17 per cent. in value. Roughly estimated, the quantity of material handled was fully equal to 10 per cent. greater than in 1888, the average falling below that figure in breadstuffs and above it in live stock, while there was comparatively little difference between the ratios of bulk and value outside of the cereals and flour. The total arrivals of vessels at Chicago during the

year number 10,507, and comprise 5,138,000 tons. The amount of real estate transfers was $235,318,615, an increase over 1889 of 58 per cent.

A California syndicate is trying to obtain from the Government a grant of 500,000 acres of public land in Alaska. As an inducement the Government is offered the privilege of buying all the coal it wants at the bare cost of mining.

Labor struggles in Germany have sensibly abated, and in the United Kingdom there is a more peaceful outlook.

The shipping registered at Halifax decreased 7000 tons during the year. There has been a general decrease in the tonnage of wooden shipping all over the Maritime Provinces, sailing vessels being gradually replaced by coasting steamers. The annual statement of New Brunswick's shipping shows little change since a year ago.

The United States is not only furnishing Continental Europe with many of its electric machines and lighting Paris by electricity, but has recently sold $300,000 worth of dynamos and lamps with which to light up the stations of the Midland Railway of England.

Spain follows the Protection movement in the United States by increasing the duties on many imports.

Nearly 100,000 tons of ice were imported at New York last year.

Nickel deposits are known to exist near Georgian Bay, on Lake Superior, in what is known as the Spanish River region. Robert Forbes, of Duluth, is among persons interested there, with the object of developing valuable properties.

The refusal of the Union Pacific Railway to allow the St. Paul and Rock Island roads to use their bridges over the Missouri River, at Omaha, on the ground that the contract is illegal, causes much trouble. To allow the use of terminals worth $10,000,000 for mere nominal rental Mr. Gould says is ridiculous.

An outlet for the Alaska coal beds is provided for in a bill before Congress introduced by Senator Stewart. Several members of the Alaska Commercial Company propose to build a railroad from the coal fields to Hesendon Bay, on Behring Sea, or Portage Bay, on the Pacific Ocean.

The Western Association, which Jay Gould is trying to organize, will, if successful, absorb four large traffic associations, the Western Freight, the Trans-Missouri, the Trans-Continental, and the Southwestern Railway and Steamship, including 60 roads, having a mileage of 75,000 miles of track, or nearly half the total mileage of the country. It is the biggest traffic combination ever attempted.

The number of sheep in Australia is 105,000,000, an increase of 8,000,000 over the previous year, principally in New South Wales.

New buildings erected in Cleveland last year have a valuation of over $5,000,000, an excess of $706,000 compared with 1889.

After reviewing the condition of the several prisons in the State of New York, the Superintendent, in his annual report, says the improvement seems to afford the strongest ground for the continuance of the industrial system, without change in any material respect, until a larger experience shall prove that changes will be beneficial, and shall also point out with some distinctness what may be required, if anything.

The new direct route from the Pennsylvania coal fields to the New England States via Campbell Hall and the Poughkeepsie Bridge is not altogether free from financial difficulties. The feeder from Slatington, on the Lehigh River, known as the Pennsylvania, Poughkeepsie and Boston Railroad, has not done a business large enough to permit the prompt payment of interest which fell due January 1.

For many years our exports of silver have invariably shown a large excess over imports, but since the monthly purchases of bullion by the Government were increased the outward movement has not unnaturally shown a large falling off. The change is particularly striking when the last five months of the Government s fiscal year are compared with 1889, the exports of silver having declined from $8,696,946 to only $118,000 in the later period.

The president of one of the great Western railways recently remarked that the time had come when the rate making power must be vested in such a manner that neither railroad officer nor shipper of merchandise can meddle with it. Equitable rates, based upon economical management, upon management divested of the extravagance of universal solicitation and subordination of patronage, must be fixed, and the traffic must be divided according to such rates from all competitive points. It is the remedy that all railroad managers have known for years—the remedy which Commissioner Walker has so lucidly set forth.

The exports of American manufactured cotton goods during the last year exceed in value $11,000,000, or more than 10 per cent. over the previous year. China is the largest consumer.

Agitation has commenced in favor of permanent underground improvements in Broadway, to meet the demands for rapid transit and for all pipes and wires of whatever description, the work to be prosecuted simultaneously with the construction of the cable road next spring, when the entire thoroughfare will be upthrown by the removal of pavement. It is urged that the processes of tunneling, of preparing for the cable system of the surface road and of repaving could be carried on at once with economy for all.

Respecting the new harvester combine, President Thomas M. Osborne is reported as saying that there are 22 concerns that have either sold out or joined the new company, and none of them will be closed. All will not be operated as manufacturers of machinery, however. The intention is eventually to manufacture all the paints, varnish, twine, &c., used in the business.

Judging from the abundant ice crop being gathered the ice machines will be run next summer at a reduced profit, but such as do not depend on the scarcity of natural ice have come to stay.

Marshall Field & Co., of Chicago, will test the constitutionality of the McKinley Tariff act.

The Government has decided to remove the obstructions to navigation in the Niagara River so as to make a channel 18 feet deep between the mouth of the river and Tonawanda, instead of 12½ feet, as it now is. The contract has been let and work will begin this week.

The American Chemical Society at their session in Philadelphia last week took steps toward uniting with other bodies of chemists in the formation of a national organization. Prof. G. F. Barker, of the University of Pennsylvania, was elected president of the society for the coming year.

The business failures throughout the United States during 1890, as reported to R. G. Dun & Co., number 10,907, or only 25 more than in 1889. The liabilities, however, were $139,000,000, an increase of $41,000,000 on those for the preceding year, and the largest since 1884, when they were $225,000,000. In Canada the failures for the year were 1847, against 1777 during 1889, and the liabilities were $18,000,000, an increase of $4,000,000.

It was stated that the Northern Pacific had taken off one transcontinental train and is employing the engines thus released in hauling the immense wheat crops out of the Walla Walla and Palouse valleys. A perfect string of cars is passing over the Cascade division, and the General Manager wants a portion of it doubled tracked. It is probable, too, that the line between Portland and Tacoma will have to be double tracked before long.

The Walnut Street Bridge in Philadelphia, to be finished this year, will cost $1,000,000, and several others are near completion.

The Standard Oil Company have now control, it is reported, of nearly every tank steamer carrying petroleum from the United States to Europe. With their recent purchases the company's fleet now includes 21 steamers of this class, having a total capacity of 24,435,000 gallons, or enough, it is claimed, to carry in 20 trips the entire year's exports.

Philadelphia is erecting more new buildings than ever before. Up to December 1 12,009 operations were started in the city, at an estimated cost of $35,043,795, exclusive of the cost of the ground, against $32,745,739 for all of 1889, when 10,250 new buildings were erected.

About $200,000 worth of State property was destroyed by the burning of a section of Dannemora Prison, 1st inst., including the machine shops.

The Metropolitan Traction Company of Philadelphia, who control the Broadway and Seventh avenue, Broadway surface and other street car lines in this city, have decided to increase their capital stock from $10,000,000 to $20,000,000. With the $6,000,000 thus secured the company intend to lay the proposed cable on the Broadway surface road and to buy the additional property. The cable will enable the company to dispense with 2000 horses

A complete list of embezzlements in the United States during the year 1890 is published by the Chicago *Tribune*, filling two newspaper columns. The most notable month for events of this nature was November, the misappropriations revealed then amounting to $1,550,800. The total amount for the year is $8,622,956. Pennsylvania leads in the greatest amount of funds embezzled—$2,326,837. New York comes second with $1,929,270, Missouri is next with $596,384, while Illinois ranks fourth with a total of $406,938. The treaty abolishing the Dominion as a harbor of refuge for embezzlers and other defaulters was ratified last March, yet the total of $8,565,956 for 1890, is greater than in any one of the many past years, the single exception being 1884, when the aggregate exceeded $22,000,000.

Shipbuilding on the Delaware has a most promising outlook for 1891. Cramp's contract for the Government alone amounts to $11,955,000. Work on Cramp's new shipbuilding plant in Philadelphia will begin next spring with dredging out the entire water front, nearly 1000 feet.

So complete is the collapse of the old and powerful banking firm of Baring Bros. that the leading members, not excepting Lord Revolstoke, are reduced to comparative poverty. As a result elegant mansions are vacated and important business enterprises abandoned to more favored successors.

The Iron Age

New York, Thursday. January 8, 1891.

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RICHARD R. WILLIAMS - - HARDWARE EDITOR.
JOHN S. KING, - - - - BUSINESS MANAGER.

REMOVAL.

The publishing and the editorial offices of *The Iron Age* have been removed from 66 and 68 Duane street to more commodious quarters at 96–102 READE STREET, between Church street and West Broadway.

The Panacea for Dull Times.

Our old friend, the standard rail, appears again in the daily press as the panacea for the rail trade. It is assumed that the manufacture of steel rails, as at present conducted, is all wrong, inasmuch as the mills can only work when they have orders, because every railroad requires a special pattern, and therefore no mill can run on rails for stock. Now, if a standard section should be adopted for each weight of rail, it is argued that rails would be rolled and piled up in times of slack demand from the railroads, because the manufacturers would know that they would have no trouble in disposing of them in due course of time. It is even asserted by some who have written lately on this subject that such standard rails might be made a speculative product like wheat or corn, so that "futures" could be sold and the money raised in that way by the manufacturers to carry on their operations. All this seems too absurd to be seriously considered, but as the subject has been brought up as a fresh topic of discussion, it may be well to set forth the facts as they are.

In the first place, it would be impossible to select one section as a standard rail. Those who urge such a scheme do not understand the subject at all. Some railroads with very heavy traffic use exceedingly heavy rails, while others with lighter traffic adopt sections as nearly suited to their requirements as they can get them. Theoretically, even a railroad with light traffic would act with true economy in buying heavy rails, but the outlay per mile would be so much more than for light rails that the company's revenues might not permit it. Varying sections have been brought about as much by close calculations of the cost of rails and the weight required for the service as by whims of railroad officials. The patterns in use to day of a given weight are very much fewer in number than they were some years since. In that respect there has been some approach to a standard rail. As the business of a railroad increases, heavier rails are necessary, and they are gradually introduced in the tracks as the old rails wear out. Every year sees an increase in the weight of the rails used on all important roads. Some American roads now use 90-pound rails, whereas but a few years since a 67-pound rail was regarded as meeting the full requirements of our greatest roads, and even now there are important lines whose financial condition does not permit them to lay over 60-pound rails in their tracks.

In the next place, if a rail company considered the policy a good one, certain sections could be selected which are sufficiently standard to permit them to be stocked up. There is hardly a rail mill in the country without certain regular customers who can be relied upon to take a reasonable quantity of rails at the market price year after year. In such cases the signing of contracts is more or less a formal affair. Yet, with this certain trade in sight no rail company would regard the manufacture of rails in anticipation of an order as a proper business proceeding. If no other hitch could possibly occur, it might happen that the railroad company for whom the rails were intended would not need them for months after they were rolled. Meanwhile a large amount of money would be locked up, and capital would thus be absorbed which might be greatly needed in other directions. A week's work for a large modern rail mill is—say, 6000 tons—and at closest possible cost this would mean $150,000 for labor and materials. Four weeks' run would mean $600,000. How many rail companies could stand a month's run under such circumstances, if the rails thus made were not sold until late in the year, while additional capital would still have to be provided for business to follow? Further, the rails, when sold, would probably not be paid for promptly on delivery.

Other branches of the iron trade, situated more advantageously than rail mills for anticipating business, have not found it good business policy to carry large stocks of manufactured products. The interest account is too heavy, and prices are too likely to fall under the weight of a large "visible supply." Pig iron manufacturers received a severe lesson in the depression of 1873–78 in this respect, which has not yet been forgotten. Large stocks were piled up in the belief that the revival of trade would soon absorb them. They were not all absorbed until the great boom of 1879, and in the meantime strong concerns had been wrecked which it had been supposed would require a succession of financial earthquakes to topple over. Manufacturers of merchant bar iron make a staple article, and could easily pile up a stock of standard sizes, instead of shutting down their mills when out of orders, but they do not do it, as the capital required would be too large and the risk of loss by a shrinkage in price would be too great. Sheet iron manufacturers have been frequently advised by their customers to accumulate stocks in the dull season of every year, so that they might ship more promptly during the active season, but they decline to take the advice, although sheet iron is a standard article with fixed merchantable qualities. The manufacturers will not take the risk of a declining market and lose interest on locked up capital merely to keep their works in operation to satisfy outside business interests. They are not operating eleemosynary institutions, but are obliged to consider, probably more carefully than any other class of business men, how to make both ends meet.

Cast Iron Versus Steel at Chicago.

The prospects are bright for a lively row between the advocates of cast iron and steel respectively, when the plans for the Chicago World's Fair buildings come up to be approved by the management. Chicago manufacturers of architectural iron work have seen with much dissatisfaction the displacement of cast iron columns by steel in the erection of new buildings for office and mercantile purposes, and have done what they could to check the tendency in that direction toward the entire abandonment of cast iron. It is plain that with the use of steel columns the erection of modern large buildings will naturally fall into the hands of bridge builders, and the occupation of the architectural iron workers as a distinctive craft will be gone. It is thus almost a fight for self-preservation. They are particularly strong in Chicago, which was for years a most inviting point for their operations. As the capital for the World's Fair will be almost entirely supplied by Chicago people, the claim is that local interests should be encouraged by the use of cast iron instead of steel wherever practicable. This would give employment to a number of local foundries, it is assumed, and the benefits resulting from the work would be more widespread than if steel were to be adopted. One authority figures up 30,000 tons as the probable requirements of the Fair, if cast iron should be favored. The competition for all classes of foundry work has, however, been very active in recent years, and, as large contracts for castings to be used in Chicago have been captured by outside foundries, it is not likely that castings for the Fair would prove to be very remunerative to the foundrymen contracting for them.

Iowa's Position Toward Railroads.

The statement was recently published by a presumed authority on railroad construction that but one mile of new railroad track had been built in Iowa last year. Coupled with this statement was the declaration that this "is easily explained by capital shunning a commonwealth that seeks every opportunity to attack its rights." In reply to this, Railroad Commissioner Campbell of Iowa has published a letter which vigorously refutes the allegations made. He reports upward of 100 miles of new railroad; and mentions besides a number of new enterprises in Iowa in which capital is now

being invested. So checkered is Iowa with railroads that a spot cannot be found in the State where a man can stand and be 15 miles from one. Of the 99 county seats 98 have railroad connections. The State has over 8500 miles of track, which is more than some of the leading States in the Union can claim. He says that capital is now largely being expended in the improvement of lines, in the erection of better depots, in double tracking, in stone ballasting, and in other ways calculated to promote the safety of travelers, to attract more business and to increase earnings. Legislation in Iowa, he claims, has no terrors for honest investors, for in no State in the Union has the property of individuals or corporations a safer tenure and greater security than in Iowa. Under Iowa railroad laws and the Commissioner's rates not a single road has been bankrupted. He further points out the fact that the Iowa rates are not onerous, because, for most of the time since they were enacted, the roads have made rates even lower than the Commission. The significant fact is mentioned that for the year ending June 30, 1889, while the interstate traffic fell off nearly 6,000,000 tons, the local traffic increased 346,270 tons, showing that the business of the State was having a healthy growth. Commissioner Campbell's letter is a remarkably strong document, and will go far toward removing the impression which certain railroads have been cultivating with regard to his State.

The Valleys Shut Down.

The most significant event during the week has been the determination expressed by the great majority of the furnacemen of the Shenango and Mahoning valleys to suspend operations, unless the cost of putting their product on the market is reduced. The furnaces of the valleys work under nearly identical conditions. All of them depend upon the Lake Superior district for their ore and upon the Connellsville coke region for their fuel; only a few of them using cinder to cheapen their mixture for forge grades. The ore was contracted for at a time when prices for pig iron were very much higher, and when the outlook was very bright indeed. In fact, quite a number of the furnace companies are credited with having made a good deal of money during the advance early last year, because they had stocks of cheaper ore from the preceding season. But during the second half of the year the market slumped persistently, and with contracts for high raw material the cost remained high. The situation affected alike those who were producing forge and foundry grades and those who were running on Bessemer metal. The latter has been affected principally by the moderate business done in steel rails and the wretched outlook for that branch of the trade during the coming year, in spite of the tremendous increase in the make of soft steel. The foundry and forge irons have been influenced chiefly by the competition of the Southern makers. That competition has grown more severe since the financial stringency, which has forced so many of the Alabama companies to sacrifice sales. It is an open secret that, with possibly one or two exceptions, the Alabama plants have been forced to dispose of their iron at prices which are below cost. Whatever may be the claims of Southern boomers, we have it on the authority of the foremost makers of pig iron—men who have been in the business all their lives—that $9.25 @ $9.50 is the very lowest cost reached at Birmingham, and that $10.50 @ $11 more nearly represents the average of the district. Now No. 3, the principal product of the furnaces, has sold in large quantities at $9.25 @ $9.50, so that there has been a decline in the face of a restriction of production through the coal strike. Financial weakness alone can explain such an anomaly, but the fact must not be lost sight of that, as soon as the more potent cause is removed, the reduction in the supply must bring about its natural result.

But while it is a fact that valley furnacemen producing foundry and forge grades for the open market are struggling against an exceptional condition of affairs with their competitors, it is true also that they must have relief more permanent in its character. They know that soon their ore will cost them much less, but they must have assurances that there will be a lowering of freights and that coke will be still cheaper. They have nothing to lose and much to gain by idleness now. It is estimated that if prices on ore and fuel and rates of freight are reduced to a figure which leaves a very good profit to the ore and coal miners and to the transportation interests, then the cost of run of furnace can be reduced to $12 at the very best equipped plants in the valleys, and we need hardly add that the majority of them are modern installations. It is this very fact, which is only too generally lost sight of, that the iron made of Connellsville coke and Lake Superior ores bears burdens of profits which are not equaled in any part of the country.

Summarizing the latest special telegraphic advices, we may state that in the Shenango valley there are out the Alice, Ella, Neshannock and Raney-Berger, while there are already banked the Claire, Mabel and one Stewart. Spearman and Keel Ridge report that they propose to go out of blast soon, and we are advised that the others will suspend operations by the 10th inst. The only furnace which will continue to run is the one Stewart. The monthly output of the furnaces in the Shenango valley is about 50,000 tons, the December product having been 43,900 tons.

In the Mahoning valley, one each of the Himrod, Hubbard, Brierhill, Mary Hazelton and Mahoning valley stacks are out and Struthers is banked. Hannah and Grace were out, and the second Hubbard will stop on the 10th, as will all the others with the exception of the Falcon and Phœnix furnaces of Brown, Bonnell & Co., and Thomas at Niles. The furnaces idle, or about to stop, represent a monthly output of 37,000 tons, while the three which will continue to run may be rated at 10,000 tons. In other words, the capacity idle in the two valleys will aggregate 87,000 tons per month, while the plants which will continue to run make monthly 12,000 tons. In all, 23 furnaces have signed an agreement to stop by January 10th, and to remain idle until the majority of those signing the agreement resolve to resume.

Cold Water in a Red Hot Boiler.

Supplying a red hot boiler with cold water has always been an interesting experiment, but, as such trials have almost invariably been the result of accident and not of design, the lessons they might teach have been lost. It is common knowledge that an empty boiler may be destroyed by being subjected to too great heat. It is also well known and authenticated that overheated boilers having a short supply of water occasionally explode, and that the failure in almost every case is confined to the part overheated, for the simple reason that it is that part of the boiler which for the time being is weakest. The belief that a red hot boiler may be exploded by the introduction of cold water and the sudden generation of an immense volume of steam is prevalent, but is not held by experienced engineers of repute.

In order, mainly, to prove the absurdity of this generally accepted opinion the Manchester Steam Users' Association instituted a series of tests to ascertain precisely the effect upon an overheated boiler of the entrance of cold water. Although the conclusions finally reached after a number of complete and independent tests were in a measure foreseen, the information obtained is of unusual value and interest.

The test was made with an ordinary Lancashire boiler 28 feet long, 7 feet in diameter in the shell and 3 feet in the furnace tubes, the thickness of both shell and furnaces tubes being $\frac{7}{16}$ inch. The tubes were plain lap-jointed, single riveted. The boiler was set in the usual way and provided with the usual fittings. In addition, provision was made for noting the behavior of the boiler during the several experiments.

The first experiment was conducted as nearly at atmospheric pressure as possible, both safety valves being held open, the water level in the boiler was lowered to the level of the fire bars, thereby leaving bare the whole of the upper part of each furnace tube. To lower the water by opening the blow-out tap required 12 minutes, and 2 minutes after, or 14 minutes from the time overheating began, the safety valves were closed, the feed turned on and showered upon both furnace crowns. The water sprayed the hottest part of the boiler at the rate of about 5½ cubic feet per minute. In three-quarters of a minute the pressure rose from 6 to 27 pounds, after which it fell gradually. The injection being continued, in 13½ minutes the pressure had fallen to 6 pounds. An examination showed that the furnaces had been severely overheated, the overlaps at the seams were badly sprung and the tubes distorted.

The next test was somewhat similar, but the valves were loaded to 40 pounds to the square inch and a fusible disk was attached to one of the gauge rods on each crown sheet in order to give notice of overheating. To afford additional evidence of overheating two strips of lead were placed at 4 and 6 feet from the front end of each furnace tube. In six minutes from the time of lowering the water to within 3 inches of the fire bars, or 10 minutes from the beginning of overheating, the right hand furnace crown began to bulge down and collapsed before the feed valve could be opened, the opening formed measuring 3 feet circumferentially and 12 inches wide at the center. The fusible disks and lead strips were melted. Although the collapse of the crown before water could be admitted rendered useless the special object of the test, the record is of value as showing the failure of a tube from low water under certain conditions.

As these tests did not follow actual practice in letting the water out at the blow out tap, in the next tests the crowns were laid bare by evaporation, as would occur under ordinary circumstances. In the most important of these tests each crown was fitted with three fusible gauges, one being a disk of zinc 6 inches in diameter secured with three set screws, and the other two being plain plugs $\frac{3}{4}$ inch in diameter, one of tin, the other of lead. In addition a lead strip about $1\frac{1}{2}$ inches wide and $\frac{1}{16}$ inch thick was bound across the middle of each belt of plating so as to afford an indication of the extent to which the overheating extended longitudinally along the crown of each tube. The fires were worked up to a brisk condition, the safety valves were loaded to 25 pounds, but with the water level with the crowns the pressure rose to 30 pounds, both valves blowing freely. The first sign of overheating was at the end of 18 minutes, when the lead plug on the left hand furnace fused. In three more minutes the tin plug gave way, and in two and a half minutes more the zinc disk on the other furnace melted, the water level at this time being $3\frac{5}{8}$ inches below the crown of the tubes. We now come to the most interesting part of this experiment, as at this moment the feed water was showered on the crown through a pipe laid directly over it, the rate of injection being $4\frac{1}{2}$ cubic feet per minute. No increase of steam pressure was noted; on the contrary, it steadily declined, proving that under the usual conditions of working there is no sudden rise of pressure due to the entrance of water in an overheated boiler that is short of water. But, in view of the result of the tests first noted, when the steam had no outlet and the pressure rose from 6 to 27 pounds, it is conceivable, as the chief engineer points out, that if shortness of water occurred, and feed was turned on while the engine was standing, and pressure below the blowing off point, a rise of pressure might be produced, and that this increment might suffice to turn the scale and cause collapse.

This presupposes a refinement of conditions not likely to occur. When the boiler was examined after the test traces of overheating were found. The crowns had been red hot, and the spraying of water on them from 32 $\frac{1}{4}$-inch jets produced effects of the most trying nature, and yet the boiler did not, comparatively speaking, suffer severely.

The Coke Workers' Scale.

On Saturday, the 3d inst., a conference was held at Scottdale, Pa., between the coke operators and the employees of the Connellsville region. At this conference the new scale of wages formulated some time ago by the employees was presented to the operators for their consideration. The scale in detail is as follows:

It is mutually agreed as follows: That the prices to be paid at any and all plants operated by the said ..... for mining coal and drawing coke shall be adjudicated by weight, by the ton or bushel, at the following rates:

Mining and loading room coal, dry, per 100 bushels, $1.07; per ton, 29 cents.

Mining and loading room coal, wet, per 100 bushels, $1.17; per ton, 31 cents.

Mining and loading heading coal, dry, per 100 bushels, $122; per ton, 33 cents.

Mining and loading heading coal, wet, per 100 bushels, $1.32; per ton, 35 cents.

All narrow work to be paid heading rates, wet and dry, as the case may be, and this applies to first cut through in drawing ribs. Where it occurs that a place is troubled with continual hard coal, or any other deficiency, such special rates shall be paid as the mine boss and local committee may agree upon, and double price shall be paid for all slate or bony coal picked out and thrown back, and in all cases where two men are required to work together 10 cents per 100 bushels, or 3 cents per ton, shall be paid. Where water falls on a miner, or where he gets his feet wet, shall be recognized as a wet place and entitled to wet allowance. Rates for other classes of labor shall be as follows:

Driving, full run not exceeding eight hours	$2.25
Rope riding, run not exceeding eight hours	2.25
Roadmen, eight hours	2.25
Timbering, eight hours	2.25
Horseback men, eight hours	2.25
Cagers, full run not exceeding eight hours	2.25
Trappers, run not exceeding eight hours	1.00
Tipplemen, run not exceeding eight hours	2.00
Cagers at crusher, run not exceeding eight hours	2.00
Chargers, with horse or mules, per oven.	.05
Chargers, with pit wagon, per day, eight hours	2.25
Chargers, with locomotives, per day, eight hours	2.00
Charging engineers, per day, eight hours	2.50
Coke drawing, per 100 bushels charged	65
Or per ton charged	17
Leveling, per oven	11
Firing cold ovens, per oven	25
Closing ovens, lay off days and Sunday, per oven	01
(Hand-picking coke shall not be the work of coke drawers.)	
Forking box or stock cars under 40,000 pounds, per car	1.25
Forking box or stock cars of 40,000 pounds per car	1.40
Forking box or stock cars over 40,000 pounds, per car	1.65
Forking open top cars, small	1.40
Forking open top cars, medium	1.65
Forking open top cars, large	2.00
Loading stock by forking or otherwise, per oven	33
Ash carters, per day of eight hours	1.75
Yard labor, per day of eight hours	1.60

All classes of work not mentioned in the above list to receive an advance of 10 per cent. above the wages they received under the agreement expiring February 10, 1891. Eight hours shall constitute a day in all classes of day labor. Scales for weighing coal in larries shall be placed under all bins, and in all cases where coal is weighed 76 pounds shall be a bushel, and 2000 pounds a ton. Drivers shall not be required to harness, unharness nor clean mules. Rib drawers shall not be required to knock out and carry back posts, and when the rib exceeds 15 feet in width, 15 cents per 100 bushels, or 4 cents per ton, extra shall be paid.

House rent shall not exceed 12 per cent. per annum, of its assessed value, to be collected semi-monthly. Check weighmen shall have a check number, and their account carried through the office as the accounts of employees are. Strikes or suspension of work on the part of employees shall not be allowed unless three (3) days' written notice shall have been given by the district officers to the general manager of said.....at his office ..... A single notice shall be sufficient for all plants operated by said.....and said ....shall not close down or suspend operations at any plant or part of plant without first giving three (3) days' written notice of their intention to do so, both to the district officers and local officers at the plant or plants affected; nor shall any superintendent or manager discharge or suspend any employee without first giving such employee three (3) days' notice, and no employee shall quit the employ of said.....without giving three (3) days' notice. None but union men shall be employed, and non-union men shall be discontinued in service as soon as their places can be filled by union men. It shall be the duty of the management to see that all men and boys are out of the mines within a reasonable time after day's work is done at such mine. The agreement to go into effect on the 10th day of February, 1891, and continue in effect until the 10th day of February, 1892.

Scale as amended by the Scale Committee.

JAMES KEEGAN, President.
MICHAEL BARRETT, Secretary.

To say that the operators were surprised at the demand made by this scale is putting it mildly. In the answer sent to the workers by the Operators' Conference Committee they set forth that the demands are unreasonable and unfair, and cannot be complied with, and the labor organization is asked to act justly by agreeing to bear a share of the burdens of the present business depression, and instead of asking an increase of from 15 to 20 per cent. to submit to a reduction. The scale now in force does not expire until February 9, and unless the workmen agree to considerably modify their demands a strike will take place. It is certain that the operators will not sign the scale in its present shape.

OBITUARY.

WILLIAM H. PAINE.

Col. W. H. Paine of New York City, who was regarded as one of the foremost engineers of the country, died in Cleveland, Ohio, 31st ult. of heart disease. William H. Paine was born in Chester, N. H., in 1828, and was the descendant of an old New England family. After obtaining an academic education he took a course of engineering, and his first employment was as a land surveyor in the wilds of Wisconsin. From there Colonel Paine went to California, where he introduced new methods of engineering and engaged successfully in many mining enterprises. In 1849 he surveyed a wagon road across the Rockies, and in 1853 had charge of a party that surveyed a route for a Pacific railroad across the Nevada Mountains from Sacramento to Utah. He raised several regiments of Wisconsin troops during the war of the rebellion and accompanied the Fourth Wisconsin to Washington. He entered the Engineer Corps, where his training and experience immediately made him a prominent and successful officer. Colonel Paine conducted some hazardous enterprises, and was more than once personally thanked by President Lincoln for the valuable information he obtained. Among this was the dimensions of all the railway bridges between Washington and Richmond. Many of them had been destroyed by the rebels, and to secure the onward movement of the army material had to be prepared in advance for their reconstruction.

At the close of the struggle Colonel Paine resumed the practice of his profession, and in 1869 he was chosen one of the engineers of the Brooklyn Bridge. He assisted John A. Roebling in making the original surveys, superintended the building, placing and sinking of the caissons, built the New York tower, and was in

charge of the laying of the superstructure and the regulating of the cable wires. He invented the grip in use on the cars and planned the whole system of cable traction on the bridge. He remained with the bridge as assistant engineer for some years and then resigned, to open an office in this city as consulting engineer in connection with cable railroad enterprises. He drew the plans from which the Tenth avenue and the 125th street cable roads were built, and the plans for the proposed Third avenue cable road were also his work. He superintended the construction of cable roads in Denver, Kansas City and Omaha, and at the time of his death was in charge of the construction of the cable road in Cleveland, which is now almost ready for operations, and there was overworked. Colonel Paine leaves a wife and two grown daughters, one of them married.

THEODORE FRELINGHUYSEN KINNEY.

Theodore Frelinghuysen Kinney, a former resident of Newark, died in Philadelphia January 1. He was born in Newark in 1819, and his father, A. W. Kinney, was one of the earliest hardware manufacturers in this country. Theodore was for many years the junior member of the hardware firm of Kinney & Co., Newark. He leaves a wife and three daughters.

ISRAEL L. BOYER.

Israel L. Boyer died suddenly from apoplexy, at Mechanicsburgh, Pa., the 4th inst. Mr. Boyer was born in Berks County, July 17, 1817, and came to Cumberland County 50 years ago. He located at Lisborn, where, in company with the late Judge Moser, he engaged in the manufacture of iron. During the war this forge turned out enormous quantities of iron blooms.

E. A. C. DU PLAINE.

E. A. C. Du Plaine, a well known manufacturer of babbitt metal and other alloys, died at Evanston, Ill., on the 2d inst., aged 63 years. Mr. Du Plaine's works are located at 240 South Jefferson street, Chicago, and are among the most extensive of their kind in the West. He was originally a resident of Philadelphia, where he was engaged in the same line of business, being connected with the establishment now known as the Tubal Smelting Works. He removed to Chicago some fifteen years since and at once made his mark as a skillful manufacturer and an enterprising business man.

GEORGE S. DOUGLAS.

At a meeting of the wire manufacturers, held in Pittsburgh, Pa., Wednesday, December 31, 1890, a committee consisting of D. R. Wolfe, J. W. Gates and George W. Oliver was appointed to draft resolutions in view of the death of George S. Douglas. The committee reported the following, which were unanimously adopted:

Resolved, That we learn with sincere sorrow of the sudden death of our esteemed fellow manufacturer, George S. Douglas, treasurer of the Iowa Barb Wire Company.

Resolved, That in the death of Mr. Douglas we feel the loss of an earnest, active and efficient business man, with whom it was a pleasure to do business.

Resolved, That we tender our sincere sympathy to his bereaved family.

Resolved, That a copy of these resolutions be presented to the family of our departed friend.

Resolved, That these resolutions be published in *The Iron Age* as a testimonial of our high appreciation of his many excellent personal qualities.

A careful survey of the hull of the Chicago since she has been in the granite dock demonstrated the fact that the Rahtjin paint, which was put on at Malta in April last, is much inferior to the American anti-fouling paints, and more than half of it had flaked off by friction with the salt water. To test the relative merits of the English paint and the American germicide paint one kind is being put on one side of the bottom and the other kind on the opposite side of the hull.

Washington News.

(*From Our Regular Correspondent.*)

WASHINGTON, D. C., January 6, 1891.

The metallurgical, war ship, marine engine and ordnance building institutions of the United States are to-day rapidly distancing the results of the skill and enterprise of the foremost nations of the Old World. At this moment the marine engines of the Bureau of Engineering of the United States Navy have outstripped the finest constructions of the kind turned out by any Government. The technical and engineering journals and authorities of England, France and Germany are not only studying the theoretic line of the American Marine engine problem, but its application in the recent triple screw and other realizations of their ideas. The engineering department of the navy are now even making advances on their past achievements. Chief Melville and Assistant Chief Towne have practically completed the designs of the engines for the new torpedo cruiser, which will be a step beyond anything even reached by our own Government. The officers who have had this class of engine in hand, and have built it up in problem and development on paper, claim enormous power and unparalleled speed at maximum consumption of fuel. The drawings of the engines for all the armored and other ships provided for in the Naval Appropriation bill have been completed, and speculative designs of improvements and theories of heat, steam and power as applied to ships in the future are being developed. The Bureau of Engineering is a busy place, and the march as always forward.

The naval estimates for the fiscal year 1891–2 aggregates $32,500,000, as against an estimate and appropriation of $24,000,000 for the present fiscal year. In this increased amount is included a liberal allowance for new ships.

TARIFF INTERPRETATION.

The Board of General Appraisers are not allowing anything to go by them in the way of lower duties on purely technical grounds. In a decision just issued a question arose on malleable iron castings swaged from the hot sheet in the form of the bottom of a shoe heel. The appraisers report that they are ¼ inch thick, and about 1¾ inches in diameter. One face is smooth, the other serrated in small squares. There is a cavity in the center in the form of a heart, and three nail holes. They have the appearance of brass, but tests disclose the fact that they are iron, coated with a material which resembles, or is, brass. The appraiser declared that though malleable iron castings they had "been advanced in value and condition by a subsequent process of brassing and polishing," and returned them for duty at 45 per cent. ad valorem.

Against this action appellants contend that the articles are simply malleable castings, dutiable at 2 cents per pound, as "gilt or plated wares," dutiable at 35 per cent. ad valorem. The appraisers decide that even if they are malleable iron castings they have undergone a further process of manufacture to fit them for the use for which they are designed; and the invoices show the cost of the further process. Appellants foresaw this and made an alternative claim that they are dutiable as gilt or plated ware. The evidence shows that articles known to the trade as gilt articles are gold plated articles, such as cheap jewelry, &c. We are, therefore, forced to the conclusion that the action of the collector was justified by the facts, and that it must be sustained.

PERSONAL.

John H. Mullin, mining engineer for the Fort Payne Coal and Iron Company, Fort Payne, Ala., and superintendent of the Fort Payne Furnace Company, has accepted the position of general superintendent and mining engineer of the Farmville Coal and Iron Company, Farmville, Va. Mr. Mullin is still retained as consulting engineer by the Fort Payne Coal and Iron Company.

Charles E. Munroe, chemist to the United States Torpedo Corps, is giving an interesting course of lectures in Boston on "Explosive Substances," such as dust and gas.

The Tennessee Coal and Iron Railroad Company were organized 31st ult. W. M. Duncan of Nashville, the first vice-president, resigned, and N. J. Baxter, Jr., of Nashville, was elected in his place. Second Vice-President Jackson resigned, and T. T. Hillman of Birmingham, Ala., was elected in his stead. Vice-Presidents Baxter and Hillman will have full charge of the company's operations. The following new directors were then elected to fill vacancies: John H. Inman, N. Baxter, Jr., T. T. Hillman, H. O. Armour and Samuel Thomas.

If the present plans of the Rhode Island Society for the Encouragement of Domestic Industry, are crowned with success, the people of Rhode Island will next fall be enabled to attend an industrial exhibition at Narragansett Park, where it is proposed to erect a fine machinery hall costing not less than $25,000, and the entire grounds and buildings lighted by electricity, and open the fair to the public on evenings. This association is a long established one and has been among the most successful of its kind in New England. Elaborate preparations and displays have characterized its annual fairs, to which great gatherings have been drawn from all quarters. Domestic industries of every kind except manufactories have received substantial encouragement at these fairs, and now the society propose to arrange for a big exhibit of the manufactures of Rhode Island. There is no doubt that it will be vast in extent for all phases of manufacturing are represented in this commonwealth. An auxiliary committee of citizens interested in the various manufactures, will be appointed in a few weeks to canvass their respective classes, in order to ascertain whether the manufacturers will make a large enough display of their wares to warrant the erection of such a building, and also as to the size that will be necessary. The proposed new hall will be fitted with power and shafting, and lighted by electricity, and be in every way convenient and well appointed for the exhibitions, and a credit to the society and the State.

Robert Hoe of New York has been in London supervising extensive improvements to the London works of his firm. New buildings were added covering a whole block, and making the establishment one of the finest machine shops in all London. These improvements have been made necessary in order to meet the heavy contracts for new presses recently concluded with leading London papers.

MANUFACTURING.

Iron and Steel.

The Kemble Furnace No. 1 of the Kemble Iron Company, at Riddlesburg, Pa., after a successful blast of two and one half years, has blown out for repairs. Although stack No. 2 is ready to start, it is not probable that it will be put in blast until there is a material improvement in the pig iron market. Owing to the activity in the coal market, most of the employees have found employment.

The Iowa Rolling Mill, at Burlington, Iowa, was sold at public auction on the 27th ult. to John F. Holcomb for $20,000. Transfer of the property has been delayed until dissatisfied stockholders can be heard in an appeal to the court to stay the sale.

The rolling mill of the Douglassville Iron Company, Limited, at Douglassville, Pa., is closed down at present. A number of improvements and additions are being made. As soon as these are completed operations will be resumed.

During the year 1890 the plant of the Johnson Company, at Johnstown, Pa., was operated night and day without the loss of one day for repairs. The plant is idle at present to allow the company to introduce some new machinery and devices. As soon as the repairs and improvements are completed operations will be resumed. The firm report plenty of orders in hand.

Everett Furnace of Joseph E. Shropp, at Everett, Pa., has been banked down and may remain so for some time to come. The dulldess in the pig iron market is given as the reason for suspending operations.

No. 1 Hubbard Furnace, Andrews & Hitchcock, Youngstown, Ohio, has been blown out, and No. 2 will follow on the 10th inst.

The Baackes Wire Nail Company recently purchased 18½ acres of land at Cleveland, having a frontage on the lake, for $42,500.

A propositon to increase the capital stock of the Riverside Iron Works of Wheeling, W. Va., from $1,000,000 to $1,500,000, will be submitted to the stockholders of that concern at the next annual meeting, to be held in a short time. The proposition is that the increase shall come from the surplus. The par value of the shares is $100.

A. J. Sweeney & Son of Wheeling, W. Va., have abandoned the project of erecting a wire nail factory at Council Bluffs, Iowa, as a result of a factional fight in that city over the location of the plant. The firm have received a number of good offers from several other cities, but have not as yet decided on a location. The proposition made to Council Bluffs was for $60,000, which the town proposed to raise by a sale of lots. Two sites were offered the firm, and they selected the one they considered the best. The gentlemen representing the other side were dissatisfied and secured the defeat of the proposition in the Board of Trade.

At the plant of the Junction Iron Company, at Mingo Junction, Ohio, the scarcity of natural gas for fuel is being remedied by the introduction of gas producers. At present three gas producers are being erected, each 10 feet in diameter, which will be used to supply the nail plate department and the nail factory. The natural gas was shut off entirely last week. The nail plate department and the nail factory have been practically useless for some time on account of the scarcity of natural gas. A gas producer was built in the steel department several months ago, but as yet has not been put into use.

The S. R. Smythe & Laughlin Company of Pittsburgh have just closed contracts for gas furnace plants of their design for the following firms: Riverside Iron Works, Cleveland, Ohio; Junction Iron Company, Mingo Junction, Ohio; Richmond Standard Spike Company, Richmond, Va.; Riter & Conley, Pittsburgh, Pa., and are building additional work for the Kelly & Jones Company, Greensburg, Pa.; Tyrone Iron Company, Tyrone, Pa., and Syracuse Tube Company, Syracuse, N. Y. The gas furnace plant recently built by this firm at the Pennsylvania Tube Works is in successful operation. It is stated that they are turning out more pipe and of a superior quality and at a less cost than with natural gas.

The Shelby Weldless Cold Drawn Steel Tube Company have been organized at Shelby, Ohio, with a capital of $100,000, to manufacture cold drawn steel tubes.

No. 2 furnace of the Pulaski Iron Company, now building at Pulaski City, Va., will be known as the Dora Furnace.

A meeting of the stockholders of the Fort Payne (Ala.) Coal and Iron Company was recently held at Boston, and was largely attended. The meeting voted to issue $300,000 8 per cent. 10-year bonds, the company reserving the privilege to pay them off after one year. The old Board of Directors were re-elected, with two exceptions, Judge J. A. Wilder of Fort Payne and T. P. Randall of Chicago being elected to fill the vacancies caused by the resignation of Gov. D. H. Goodell of New Hampshire and Dr. J. M. Ford of Kansas City.

The second Paxton Furnace, at Harrisburg, Pa., is being blown out, and will remain idle until a reduction is made in the price of material and transportation.

The coke furnace now in course of erection on the site of the old Lawrence charcoal furnace, at Lawrence, Ohio, will be ready for blast in about two months. The stack is 65 x 13½ feet, and will be equipped with two Gordon fire brick hot blast stoves.

The two coke furnaces of the Woodstock Iron Company, at Anniston, Ala., which closed down in October on account of the dullness in the iron market, are preparing to again go into blast.

No. 2 furnace of the Junction Iron Company, Mingo Junction, Ohio, has blown in, after putting in new hot blast stoves.

The Fort Payne Furnace Company, Fort Payne, Ala., were obliged to bank their furnace on December 14, owing to the strike of miners at the mines of the Fort Payne Coal and Iron Company. One hundred coke ovens are also out.

The Standard Iron Company of Norristown, Pa., will go into liquidation in a short time. They were chartered in 1882, with a capital of $75,000, but were never successfully operated.

The new furnace at Carnegie, a suburb of Johnson City, Tenn., is about completed. When in operation it is expected that 125 tons of Bessemer steel will be made daily from Cranberry County ore.

The Liberty Iron Company, at Columbia, Va., are to erect a 50-ton iron furnace.

The plan of settlement mapped out for the Worcester Steel Works of Worcester, Mass., has been knocked on the head by the action of one of its largest creditors. It has been positively decided that the First National Bank of West Troy, N. Y., will not agree to the assignment, and, furthermore, will not dissolve its attachment. The suit will be pushed, and the estate of Mr. Rice and the steel works are likely to be petitioned into insolvency sooner or later.

The subject of organizing a company to erect and operate an iron furnace is being energetically agitated at Mineola, Texas, near which place are said to be deposits of as fine iron ore as is to be found anywhere in Texas.

Machinery.

The Enterprise Boiler Company of Youngstown, Ohio, have received an order from the Iroquois Furnace Company of Chicago for 14 boilers, each 54 inches in diameter by 30 feet in length. They have also a contract for the stock house, which will be 85 x 135 feet. S. Frank Eagle, formerly of Youngstown, is manager of the above furnace.

The Great Western Construction Company have been incorporated in Illinois, who propose to build works in Chicago for the construction of locomotives on a new plan, designed by Hugh B. Walker, a mechanical engineer. The incorporators are Hugh R. Walker, Alfred Skinner and Thomas A. Winham. The chief characteristics of Mr. Walker's design is in the fuel saving portion of the invention, which he claims results in a saving of 9 per cent. This is brought about by the automatic admission of air to the fire box by various devices, the principal ones being steam injectors.

The Riverside Foundry Works, Cleveland, Ohio, which was destroyed by fire on November 16, 1890, has been entirely rebuilt and is now in full operation. The capacity of the new plant is nearly double that of the old one, with improved equipments and appliances.

A stock company, with a capital of $25,000, are building a brass foundry and machine shop at Middleville, Mich.

The Pioneer Machine Works is a new enterprise in Atlanta, Ga. A general machinery business will be conducted. Thomas Camp, who has for 23 years past been identified with the machinery trade of Georgia, is manager of the new enterprise.

A movement is on foot at Clinton, N. C., to organize a company for the purpose of establishing machine shops.

The Chesapeake and Ohio Railroad Company will make extensive additions to their machine shops and round house at Clifton Forge, Va. These improvements, aside from new machinery, are to cost $100,000.

The Worcester Machine Screw Company of Worcester, Mass., have recently purchased the plant which they have occupied the past ten years, which comprises a brick building 250 feet long, two stories and basement, with wing 50 x 40 feet, which is used for shipping room and offices, engine and boiler room, outside of the main building. They have erected since September 1 two new buildings, which consist of a brick storehouse 80 x 25 feet, one story high, which is used in part as a stockroom, blacksmith shop and case-hardening furnaces. They have also put up a new chimney 85 feet, 3 feet flue. Power is furnished by an 80 horse-power Corliss engine and 100 horse-power boiler. The plant occupies 30,000 feet.

The Billings & Spencer Company of Hartford, Conn., have been obliged to make an extension to their forging department of 186 x 40 feet, their business having increased more than 25 per cent.

The Puget Sound Machinery Depot Company, at Ellensburg, Wash., are putting in an $11,000 electric plant.

The Deane Steam Pump Company have just finished a fine new factory at Holvoke, Mass., which is now being occupied. It cost $75,000, and the change was demanded because the company had outgrown their old quarters and wished to concentrate their business under one roof.

The Almond-Phillips Foundry Company of Seattle, Wash., are reported to have assigned, with liabilities aggregating $25,257

R. J. Crous will build a $12,000 foundry at Greenwood avenue and Seventy-second street, Chicago.

There was a rumor afloat recently that the Armington & Sims Engine Company of Providence, R. I., proposed to establish a $5,000,000 plant at St. Louis, Mo., immediately after January 1, 1891, and remove thereto. Gardiner C. Sims has just returned from the West, and when seen in relation to the report said that there was something in it. He said: "Although nothing definite has yet been decided upon, I have been looking over the city of St. Louis with such a plan in view. It is not contemplated to remove the plant from this city, but merely to establish a branch in the Western city. The fact is, the dominant political party in power has discriminated against the iron manufacturers of New England in respect to securing coal and iron for use in their business. It is a fact that upward of 47 to 50 per cent. of the iron industries of New England are extinct, and the survivors realize that it is but a question of time when they will be compelled to take advantage of the low rates of iron in the Southwest. We are putting in three 400 horse power engines for the Lindell Electricity Street Railroad Company in St. Louis, and while I was there I met a number of the most influential financial men of the city, including eminent bankers, and looked over several pieces of property in company with several prominent Eastern manufacturers. My object in doing this was to get facts on which to base a plan for establishing a branch of our business in that city, but on account of the unsettled state of the money market at present we will not be likely to take active steps at once." Mr. Sims said that the electric railway companies had 39 miles of road in St. Louis and were building more. He was quite enthusiastic about the advantages for securing material for the iron business in St. Louis, and also the business enterprises of the people of that section. St. Louis has great iron industries, and there is an inexhaustible supply of iron ore and coal convenient to the city.

Sotter & Bros., of the Mechanics' Boiler Works, Pottstown, Pa., have during the year added to their main shop, which is 56 x 211 feet, a brick addition 30 x 120 feet, for blacksmithing and forging purposes, and in this department are about to introduce a power hammer of improved design. They have built a new boiler house, 20 x 25 feet, and put in a triple return double deck tubular boiler of 110 horse-power. They have put up a new stock house 30 x 100 feet; have added 20 feet to the machine shop building and have built a brick building 40 x 60 feet for their flanging department. Into this they have put one of the latest improved flanging machines, with a capacity of 11 inches diameter to 84 inches diameter and up to ¾ inch metal. They have erected a heating and annealing furnace, with 12 x 18 foot hearth, and have also enlarged office building to double its former size. Among the work on hand or just completed are thirteen 100-horse-power boilers for Western Pennsylvania; one stand pipe, 30 feet diameter, 60 feet high, for Morristown, Tenn.; one stand pipe, 75 feet diameter, 40 feet high, for Middlesborough, Ky.; two 8000-gallon oil tanks and 13,000 feet of patent wrought iron flooring for brick company at Buena Vista, Va.

The G. W. and F. Smith Iron Company will erect a factory 250 x 65 feet on ground recently acquired at Roxbury, Mass. The company

also contemplate the erection of some 18 or 20 dwellings for the occupancy of their workmen.

The Midland Foundry Company have been incorporated at Chicago, with a capital stock of $20,000, to do a general foundry and machine business.

The Bates Machine Company of Joliet, Ill., are building a large pattern shop on the grounds occupied by their works.

The St. Louis (Mo.) Wire Mill Company recently held a meeting and increased the capital stock from $300,000 to $500,000, the extra issue of stock being taken by the present stockholders. The increase is for the purpose of erecting new office buildings and warehouses and putting in new machinery.

Hardware.

The Thomas Mfg. Company, Springfield, Ill., state that the past season was a very satisfactory one for the Thomas rakes and tedders; in many cases they were unable to fill orders. They are enlarging their factory, and expect that they will consequently be able to fill all orders promptly.

R. H. Woodsum & Co. of East Braintree, Mass., tack manufacturers, are preparing to move their plant to South Braintree.

Commencing February 1, 1891, the Harker Mfg. Company, who have secured the premises 250-252 Broadway, corner Eighth street, Cincinnati, Ohio, will begin the manufacture of a full and complete line of carriage, coach and hearse lamps for the trade. Lewis A. Harker, for many years favorably known as a successful manufacturer of specialties and lamps, located at Columbus, Ohio, will be the general manager of the new company, and is now actively engaged in fitting up the new premises with the latest appliances and machinery.

Pullman Sash Balance Company, Rochester, N. Y., advise us they have received large orders for their balances from Barney & Smith Mfg. Company and the Lehigh Valley Railroad. They state that they are doing an ever increasing business, and that their goods are giving satisfaction to the corporations who have adopted them.

Milwaukee, Wis., papers report that an effort is being made by the Advancement Association to organize a stock company in that city with $50,000 capital for the manufacture of horseshoes by a new and valuable process.

H. E. & C. Baxter, 18 Fulton street, Brooklyn, N. Y., are manufacturing a line of electrical goods particularly designed to be handled by the hardware trade.

D. C. & H. C. Reed, Kalamazoo, Mich., are manufacturing the Eli hay rake, a recent addition to their line. It differs slightly from other rakes, but it is similar in principle.

The announcement is made under date December 29, 1890, by the Springfield Machine Company, Springfield, Ohio, that they have sold their entire hay tool business, including orders, patents and good will, to F. E. Myers & Bro., Ashland, Ohio. In announcing this change the company take occasion to thank their former customers and express confidence that any orders which may be entrusted to the future manufacturers of this line of goods will be filled promptly and satisfactorily.

The Cincinnati Screw and Tap Company, Cincinnati, Ohio, have found their present quarters at Second and Plum streets too small to accommodate their growing business. They will erect at Fairmont, one of the suburbs of Cincinnati, new works, consisting of a three-story brick building 200 x 60 feet, located near the C., H. and D. Railroad, which will more than double their present capacity. The building is expected to be ready for occupancy by the following April. The force of men will be proportionally increased, and special attention given to the manufacturing of coal hods, in addition to screws and taps.

Miscellaneous.

The N. O. Nelson Mfg. Company of St. Louis, Mo., recently held their fifth annual meeting since the profit sharing plan went into effect at their works. Mr. Nelson stated that during the five years in which the system had been in operation they had paid 43 per cent. in dividends on wages, beside the considerable amounts paid out by the Provident Committee and the amount of surplus fund accumulated to meet further contingencies. The dividend of the past year was 10 per cent.

The embarrassed Graphophone Company of Bridgeport, Conn., have many carloads of machines, which are being held for freight by the various railroads.

The Board of Trade of Gloucester, Mass., is considering the terms of location proposed by Horner & Battis, emery wheel manufacturers. At the recent conference the firm submitted their plans. The capital required to start a company is stated to be about $30,000, one-third of which will be contributed by Horner & Battis, provided the balance of the stock is subscribed by home capitalists. They will furnish employment to 50 or 70 persons, and if sufficient inducement is offered to warrant the parties in locating at Gloucester, the factory will probably be near the Cape Ann Forge Works.

The Anniston Pipe Works, at Anniston, Ala., after a suspension of a couple of weeks on account of the scarcity of coke, have resumed operations.

The manufacturer of a storage battery for street cars is negotiating for the old works of the Brayton Petroleum Engine Company, at East Bridgewater, Mass.

President Hegenisch of the United States Rolling Stock Company, Anniston, Ala., who has been appointed receiver, in company with counsel, recently went to Montgomery, Ala., for the purpose of getting an injunction from the United States Circuit Court restraining the creditors of the company from executing attachments or in any way retarding the payment of money received for the operation of the works and paying off the wages past due. The car works and foundry of this company resumed operations on the 1st inst.

Negotiations are reported to have closed at Clifton Forge, Va., for the establishment of a large stove foundry and iron manufacturing establishment. The work of constructing the plant, which is to cost $100,000, is to commence as soon as the weather permits, the site having already been selected. This enterprise, it is stated, will give employment to over 100 skilled mechanics.

B. L. Gregory of Roanoke, Va., together with capitalists from New York and Baltimore, have recently made large purchases of iron ore land in Southwest Virginia, and are organizing a company to place the property under development.

At Warrenton, Va., the East Virginia Mineral and Warrenton Improvement Company have recently been organized to develop mineral properties in that vicinity, as well as to establish manufacturing industries.

The new iron roof for the extension of the rolling mill for the Lackawanna Iron and Coal Company, at Scranton, Pa., will be built by the Berlin Iron Bridge Company. The same company are also putting up the new casting shop for the Midvale Steel Company, at Nicetown, Pa.

The Taunton, Mass., Copper Company are experimenting with a new process for the manufacture of gas for fuel purposes.

The Bellaire, Ohio, Stamping Works, manufacturers of all kinds of stamped ware, whose plant was recently destroyed by fire, are said to be seeking a new site.

At Martinsburg, W. Va., the Miami Mfg. and Improvement Company, with a capital stock of $500,000, have been organized, and will establish a number of manufacturing enterprises. G. M. Bowers is president, N. D. Baker vice president and S. W. Walker is secretary.

The iron mines near the Little Doe River are being operated by the East Tennessee Mining and Improvement Company of South Wautauga, Tenn.

It is reported that ex-United States Senator William Mahone is at the head of the syndicate that has recently purchased for $50,000 4000 acres of iron ore lands near Tazewell, Va.

It is stated that a syndicate of Boston and English capitalists, through President Ingalls of the Chesapeake and Ohio Railroad Company, have become interested at Basic City, Va. The new company will build furnaces, steel rail plant, rolling mills, boiler works and other manufacturing enterprises.

The Southern Farm Tool Company are organizing at Atlanta, Ga., with a capital stock of $100,000, to manufacture, buy and sell machinery, labor saving appliances, implements, &c. The incorporators are: C. J. Kicklichter, Atlanta, Ga.; Thomas Lumpken, Cartersville, Ga.; A. N. Hitts, Carters Springs, Ga., and others.

Recently it was announced that the Pennsylvania Steel Company of Steelton, Pa., had opened an additional industry at their plant for the furnishing of materials for and the construction of bridges of iron and steel. This new department is now ready and is already at work on the specifications for the construction of railroad bridges. When fully under way a large number of skilled mechanics will be employed to execute the work. C. E. Billing has been made superintendent of the new department.

The Dempster Mill Mfg. Company of Beatrice, Neb., manufacturers of a full line of water supplies, report an active trade during the past year. They also put on the market the Dempster Solid Wheel and Open Wheel Windmills and Water Tanks and eight different styles of iron force pumps. One of their products, on which they have a large sale, is the Lockwood Tubular Well Boring Machine. This latter is especially adapted for boring deep wells, and recent improvements have made it possible to drive through any kind of soil or rock. The premises occupied by the Dempster Company are the main building, 110 x 46 feet, three floors in hight, in which is the machine shop and erecting room, a smaller building containing the blacksmith shop and two warehouses. The power for operating the works is obtained from the Blue River. At present 75 men are employed, working full time, to keep the demand for their line of goods supplied.

The contract for building the Portview Bridge over the Youghiogheny River at McKeesport, Pa., had been awarded to the Oliver Iron and Steel Company and Charles Jutte & Co., both of Pittsburgh. The former will receive $24,000 for constructing the overhead ironwork and the latter $22,000 for building the approaches and piers.

The Monitor Pipe Works of Elizabeth, N. J., will remove their plant to Sing Sing, N. Y., early in the year. The move is made in order to secure better shipping facilities than the works now enjoy.

Among newly authorized corporations in the State of Illinois are the following: The Abutment Gate Company, Chicago, to manufacture and deal in safety gates and other improvements for bridges; capital stock, $300,000; incorporators, E. Leech, H. S. Williams and H. H. Ware. Tarrant & Ramsey Company, Chicago, to conduct a general foundry business; capital stock, $31,500; incorporators, Robert Tarrant, William H. Tarrant, John Ramsey. Heavy Heating Company, to manufacture and handle all kinds of heating apparatus; capital stock, $100,000; incorporators, Michael Heavy, Ole A. Johnson and Bernard C. Heavy. Rendtorff Hardware Company, to do a hardware business; capital stock, $50,000; incorporators, Herman Rendtorff, John C. Rendtorff, Charles W. Henning and others. Cleveland Steam Yacht Company, to build and operate steam yachts; capital stock, $100,000; incorporators, Frank B. Clark, William B. Stephens and Victor Anderson. Indiana Mining Company, to mine ore and manufacture iron; capital stock, $1,000,000; incorporators, F. L. Benham, William H. Crane, Clarence G. Browne and others. Midland Foundry Company, Chicago, to do a general foundry and machine business; capital stock, $20,000; incorporators, Wensel Morana, Eber Preble and Charles S. Burton. Kankakee Mfg. Company, at Kankakee, to manufacture refrigerators, furniture, &c.; capital stock, $50,000; incorporators, James S. McCracker, Wilber E. Hall, Walter C. Taylor and others. The Western Rolling Stock and Equipment Company, at Chicago; capital stock, $100,000; to manufacture, lease, control, or operate railroad cars, engines and rolling stock; incorporators, George E. Farley, Grant S Wheeler and William E. W. Johnson. Southern White Lead Company, at Chicago; capital stock, $350,000; for the manufacture of white lead, red lead, litharge, lead pipe, sheet lead, pig lead, and other lead products, oil and turpentine; incorporators, Hugh McBirney, Hugh J. McBirney and Frank E. Hagner.

Wm. Highton & Sons, Nashua, N. H., are preparing a number of new sizes and designs of hot air registers, and expect to issue a catalogue for 1891, which will embrace all their additions since their catalogue was issued in 1889.

Indianapolis Bolt and Machine Works, O. R. Olsen, proprietor, Indianapolis, Ind., have doubled their capacity within the last eight months, and advise us they have more work offered than they can possibly take care of. They are doing a great deal of work in the way of special machinery for encaustic tile makers, and state they are prepared to make all the special machinery used in the manufacture of encautic tiles. They are crowded with work of all kinds, and find it necessary to run overtime in order to keep within sight of their orders.

The Jewell Belting Company of Hartford, Conn., have recently made some large belts, the order from one concern being for a 50-inch three ply, a 54-inch double, a 44-inch double, two 24-inch, three 18-inch and four 16-inch double. They have also taken an order for the equipment of the Toledo Street Railway Company and for the equipment of the Rochester Electric Street Railway, the former requiring a 40-inch double.

A law promulgated in Paris, January 1, is designed to avert labor troubles, or at least to mitigate their severity, by providing that workmen must give some notice before quitting work, as employers must give notice before discharging them.

TRADE REPORT.

Philadelphia.

Office of *The Iron Age*, 220 South Fourth St., PHILADELPHIA, Pa., January 6, 1891.

Pig Iron.—The market opens with a fair amount of inquiry, but with a very unsettled feeling as regards prices. It cannot be said that they are lower, but buyers manifest very little interest in anything at quoted rates. Those who must have Iron take small lots of Gray Forge at $14.50 @ $15 delivered, for good brands, or No. 1 Foundry at $17.50 @ $18; but no important headway can be made at these figures. As a rule, sellers are not forcing matters at less money, although transactions have been made at lower rates than those; but when all the circumstances are taken into consideration, there is nothing to indicate any general disposition to do business at less than $14.50 or $17.50 for the grades mentioned, and in some cases parties hold for even better figures than these. But, conceding all this, the immediate outlook is not encouraging. In some cases Iron bought two or three months ago has yet to be delivered, and, while it is not often flatly refused, there is a good deal of dickering required to get things arranged satisfactorily. This interferes with new business to some extent, and will probably continue to do so until old contracts are completed, and it is demonstrated that bottom prices have been reached. Furthermore, there are always some who are either more timid or more needy than others, and these also are somewhat of a disturbing element, so that while the quotations with this article are as near to the market as can be given, transactions at less money are not unfrequent, varying according to quantity, quality, delivery, terms of payment, &c. It is significant to note, however, that upward of 20 furnaces in Alabama have either banked or blown out within the past 30 days, and not a few in Ohio and Western Pennsylvania are similarly situated. This will make a tremendous reduction in the output, and it is presumed will prevent further accumulations at furnaces. Taking everything into consideration, therefore, it is not improbable that prices are now pretty well down to bottom, and that as soon as the most urgent holders have realized, some little tendency toward improvement will be manifested. For the present asking prices for lots delivered in consumers' yards are about as follows:

Ohio Softeners, No. 1x	$19.00	@	$19.50
Ohio Softeners, No. 2x	18.00	@	18.50
Standard Penna, No. 1x	17.50	@	18.00
Standard Penna, No. 2x	16.50	@	17.00
Medium Penna, No. 1x	17.00	@	17.50
Medium Penna, No. 2x	16.00	@	16.25
Virginia and Southern, No. 1x	17.00	@	17.50
Virginia and Southern, No. 2x	15.50	@	16.00
Standard Neutral All Ore Forge	14.50	@	15.00
Ordinary Forge Cinder mixed	13.50	@	14.00
Charcoal Car Wheel Iron	22.00	@	26.00

Bessemer Pig.—Nearly all the furnaces are preparing to "blow out" as soon as they have used up what Ores are on hand. Prices are nominally $17.50 @ $18 at furnace, but there is nothing doing.

Ferromanganese.—Some little inquiry, but prices are irregular and uncertain. Some holders quote $63, duty paid, for 80 %, but it is said that orders have been placed within a day or two at less than $60.

Steel Rails.—Pending a settlement of matters between various conflicting interests, there is little or no business doing. Prices are said to be $30 at mill for spring deliveries, but for January or February $27.50 @ $28 would be accepted for desirable orders, but the market is unsettled and liable to sudden changes.

Slabs and Billets.—An immense amount of business has been done during the past few days, but at almost incredibly low prices. A large proportion of the orders were from the very best class of buyers, and were at prices which cannot be given with certainty. It is said that figures equivalent to $27 @ $27.50, delivered to mills in this vicinity, have been accepted, but on new business sellers talk $28 as being as low as they would be inclined to consider. Buyers show very little interest in these figures, however, which is not surprising, if the report is correct, that orders were accepted from large consumers at about $1 less money.

Muck Bars.—There is more inquiry, and prospects are favorable for a gradual resumption of activity. Prices are still somewhat unsettled, but $27 @ $27.50, delivered, appears to be about the extreme figures. There are sellers at $27.50 and buyers at $27, with prospects of sales at a medium quotation.

Bar Iron.—There is quite an active search for business, and to secure immediate specifications, extremely low figures are quoted. There appears to be a good deal of business in sight, but there are so many after it, that it will require an immense amount to give each mill a decent start. Prices, as may be expected, are difficult to quote, unless in a general way, at from 1.80¢ to 1.85¢, delivered. Some might take a half-tenth less, all depends on the size and character of the order. Several large concerns may not start up until the middle of the month or later, according to the amount of business offering and terms on which it can be had.

Skelp Iron.—There is a good deal of inquiry, but not much actual business, except at prices which no mill can accept and come out whole. Sales have been made as low as 1.70¢, delivered, for hypothecated lots, but in the ordinary way of business 1.85¢ @ 1.90¢ is asked for Grooved and 1.90¢ @ 2¢ for Sheared. An order for 500 tons Sheared Steel is on the market, and will probably be taken this week, although deliveries will not be required before May or June.

Plates.—There is plenty of talk, but comparatively little business. An immense amount of material will be wanted during the spring and summer months, and there is a fair probability that mills will be as fully employed as they ever were, but in the meantime many of them need orders now. Every one has confidence in the ultimate outcome, but the difficulty is to tide over the immediate future. The natural result is the keenest kind of competition, and more or less demoralization in prices. It is impossible to say what might be accepted on a desirable order, but 2¢ at mill would be shaded on Iron and very close to 2¢ for Steel. Ordinary asking prices for lots delivered on about a 10¢ or 15¢ freight are about as follows:

	Iron.	Steel.
Ship Plates	2.05 @ 2.15¢	2.20 @ 2.30¢
Tank	2.05 @ 2.15¢	2.15 @ 2.25¢
Bridge Plate	2.15 @ 2.20¢	2.25 @ 2.40¢
Shell	2.30 @ 2.40¢	2.40 @ 2.50¢
Flange	3.10 @ 3.20¢	2.60 @ 2.70¢
Fire-Box	3.75¢	3.75 @ 4.25¢

P. S.—An order for 5000 tons Light Steel Plates has just been closed for the East Jersey Water Company. The entire contract was taken by the Carnegies, but no particulars can be had in regard to prices, which, however, are understood to be very low. This is the lot referred to in a previous paragraph.—See *Skelp Iron.*

Structural Material.—There is not much to report under this heading, except that the demand is rather slow for the time being, but that prospects are quite encouraging for business later on. Prices are unsettled, and orders for prompt delivery can be placed on terms very favorable to the buyer. Nominal quotations are about as follows for lots delivered in consumers' yards: Angles, 2.10¢ @ 2.20¢; Sheared Plates, 2.15¢ @ 2.30¢, and from 10¢ to 20¢ more for Steel, according to requirements. Tees, 2.6¢ @ 2.7¢; Beams and Channels, 3.1¢ for either Iron or Steel.

Sheet Iron.—Business opens very fairly, and manufacturers feel quite certain that there is a great deal of business to be placed before long. Heavy Sheets are already in good demand, but Light Sheets are dull and inactive. Carload lots are quoted as follows:

Best Refined, Nos. 14 to 20.....3.00¢ @ 3.10¢
Best Refined, Nos. 21 to 24.....3.15¢ @ 3.25¢
Best Refined, Nos. 25 to 26.....3.30¢ @ 3.40¢
Best Refined, No. 27.....3.50¢ @ .....
Best Refined, No. 28.....3.60¢ @ 3.70¢
Common, ¼¢ less than the above.
Best Soft Steel, Nos. 14 to 20.....3¼¢ @ 3½¢
Best Soft Steel, Nos. 21 to 24.....3½¢ @ 3⅝¢
Best Soft Steel, Nos. 25 to 26.....3¾¢ @ 3⅞¢
Best Soft Steel, Nos. 27 to 28..... @ 4⅛¢
Best Bloom Sheets, 1-10¢ extra over the above prices.
Best Bloom, Galvanized, discount..... @ 65 %
Common, discount..... @ 67½ %

Old Rails.—There is absolutely no demand, so that quotations are entirely nominal. Holders would probably ask $24 @ $24.50, Philadelphia, while buyers seem to think $23 @ $23.50 would be a full price. For interior deliveries 50¢ to $1 more should be added to these quotations.

Scrap Iron.—At somewhat lower prices there is a fair demand, with small lots taken at about the following quotations: No. 1 Railroad Scrap, $21.50 @ $22, Philadelphia, or for deliveries at mills in the interior, $22 @ $23, according to quality and point for delivery; $15 @ $16 for No. 2 Light; $15 @ $16 for best Machinery Scrap, $14 @ $14.50 for ordinary; $15 @ $16 for Wrought Turnings, $11 @ $11.50 for Cast Borings, and nominally $26 @ $28 for Old Fish Plates and $17 @ $18 for Old Car Wheels.

The Pottsville Iron and Steel Company have opened an office in Philadelphia at 226 South Fourth Street for direct dealing with the trade, and are prepared to quote on all their specialties in Iron and Steel, such as Beams, Channels, Angles, &c.

Chattanooga.

Office of *The Iron Age*, Carter and 9th Sts., CHATTANOOGA, January 5, 1891.

Pig Iron.—The market at the present time is quiet. The uneasiness that exists among the miners appears to arouse the same feeling with the furnaces, and conveys the idea that the consumption of Pig Iron must be more limited than in the past. This, together with the idea that has gone abroad that many of the larger furnaces will soon shut down, has the effect of producing in the minds of those who are still running the impression that Pig Iron will become scarcer, or, in other words, that the production will be in a great measure curtailed, and all these things, coupled with the fact that appearances indicate an easier condition of the money market in the near future, have caused producers to believe that prices will soon advance. As yet, however, they have had no effect upon selling prices. Orders to the furnaces are still coming in on a sort of hand to mouth policy, but the furnaces are very cautious about making any contracts ahead for large round lots, most of them declining to do it at all. At the present writing everything connected with the Pig Iron business appears to be in a very uncertain condition, but as far as may now be judged the prospects are that prices will go up, although there has been no advance made as yet. A few furnaces who are able to do so are piling up their Iron, while others

are shipping their output as fast as it is made. As yet there is no solution to the problem of the miners' strike, but it is thought by many that they will soon go in. Negro labor is far from satisfactory, most of it being entirely inexperienced, but the operators say that with a few months' practice negroes will be as good as white men. We note sales aggregating 6000 tons of No. 2 at $11.50, at the furnace, 60 days. Also a sale of 5000 tons No. 2 at $11, net cash, at furnace. Some sales of good No. 1 are being made at $12 @ $12.25, and a sale of 4300 tons of No. 1 was made at $11.80, on account of its being a little off in reputation. This is about as near as the market can now be quoted. The next 30 days is looked upon with considerable anxiety by Pig Iron producers.

Cincinnati.

(By Telegraph.)

Office of *The Iron Age*, Fourth and Main Sts., CINCINNATI, January 7, 1891.

The past week has developed nothing upon which to base hopeful views of the near future, regarding the Pig Iron market as seen from the standpoint of a furnaceman. But the buyer, too, has received only slight contributions from the flight of the week. In the South the labor situation is bad and menacing, and the only compensation to producer is the prospect presented upon which to collect shattered prices and build them to more remunerative hights. As far as actual experience has gone thus far in the new year, however, there is no suggestion of a speedy recovery in prices; in fact, some of the lowest sales yet reported during the winter are said to have been made during the past week or 10 days both upon Furnace and Warrant Iron. That the money market is less stringent seems to be admitted, but business failures in some lines are occurring which checks any rapid growth of confidence, and the inference that the easier feeling so loudly proclaimed is more virtual than real, prompts the continuation of a conservative policy. A few large, or comparatively large transactions, are reported to have been made recently, and inquiries have been more numerous, but these latter have not resulted in business of importance, and it seems that although many furnaces are idle in the South, that consumptive orders for Iron are proportionately as low as production, but the reduction in prices is not accounted for on this basis, and it seems that there is yet much difficulty in obtaining needed funds, which compels sales of Iron at low prices. The largest sale reported is of between 4000 and 5000 tons Southern Gray Forge on basis $9.50, cash, Birmingham; 1000 tons and 1500 tons, do., on same basis. No. 2 Southern Foundry has been sold at $11, four months. Some liberal sales of Mahoning Valley Irons are also reported. Mottled Iron is scarce and relatively higher, being now held at the same price as Gray Forge. At the close a number of small sales are reported, and seem to indicate a more healthful buying movement. Quotations are without important change and are approximately for cash, f.o.b. cars Cincinnati; as follows:

Foundry.

Southern Coke, No. 1	$14.50 @ $15.00
Southern Coke, No. 2	14 00 @ 14.25
Southern Coke, No. 3	13.25 @ 13.50
Ohio Soft Stone Coal, No. 1	17.00 @ 17.50
Ohio Soft Stone Coal, No. 2	16.00 @ 16.50
Mahoning and Shenango Valley	17.50 @ 18.00
Hanging Rock Charcoal, No. 1	21.00 @ 22.00
Hanging Rock Charcoal, No. 2	19.50 @ 20.50
Tennessee and Alabama Charcoal, No. 1	18.00 @ 19.00
Tennessee and Alabama Charcoal, No. 2	18.50 @ 19.50

Forge.

Gray Forge	12.50 @ 12.75
Mottled Neutral Coke	12.00 @ 12.25

Car Wheel and Malleable Irons.

Southern Car Wheel	22.50 @ 23.50
Hanging Rock, Cold Blast	24.00 @ 24.50
Lake Superior Car Wheel and Malleable	21.00 @ 22.00

Cleveland.

CLEVELAND, January 5, 1891.

Iron Ore.—There are reasons for believing that the report published exclusively in these quotations two weeks ago concerning sales of certain grades of Ore for delivery next summer was not without foundation. It is beyond the possibilities to obtain particulars, but the rumor of sales is generally current in Iron circles. It is not thought that these transactions will open up the market as a whole, but that they indicate rather the desire of certain furnacemen to secure a guarantee of obtaining a grade of Ores particularly desirable for next season's use. The price obtained is said to have been from 50¢ to 75¢ less per ton than was paid for the same Ore during the buying season of a year ago. Nothing has thus far been done about lake freights for next season, but that they will not exceed those paid during the year just closed is a foregone conclusion. From 3500 to 5000 tons of Ore are being sent forward to the valley furnaces from the local docks every 24 hours.

Pig Iron.—There has been no change of consequence in the situation beyond a slight exhibition of life after the holiday dullness. Consumers are approaching the market timidly, and it is only here and there that a furnaceman is found in any degree anxious to sell. The few exceptions make it impossible for those earnestly solicitous of pursuing the policy of starvation until the buyers must make concessions to accomplish anything. Furnacemen are happy in a measure over the reduction in the cost of Coke and are working hard with the railroad officials to obtain a corresponding cut in transportation rates. Just at present they seem in a fair way of succeeding, but even if they do it is feared that some dealers may cut rates to correspond with the cheapened cost, and in this manner neutralize all the good work that has been done. Mill Irons have sold in small quantities at about the old values, while Bessemers are weak.

Manufactured Iron.—The market is still lifeless, and Common Bar is only in fair demand at 1.70¢ @ 1.75¢. Muck Bar is down to about $27.50 @ $28, although no sales are reported.

Old Rails.—Old Americans seem in no demand at present. About $24.75 @ $25.25 would be asked if inquiries were made.

Nails.—Steel Wire Nails are off 5¢ ₱ keg, being now quoted at $2.25, with Steel Nails at $1.80, also 5¢ lower than last week.

Scrap.—The market is dull, and no sales reported, although a revival of business is looked for in a week or two.

Detroit.

WILLIAM F. JARVIS & Co., Detroit, Mich., under date January 5, 1891, writes as follows: That comparisons are odious is certainly shown when the market of just a year ago, with its good figures, buoyant nature and future possibilities is placed side by side with the present decidedly low figures, and the future problematical only with general indications toward stationary prices, which cannot be considered as entirely satisfactory to the Pig Iron producer. While the scale from January and February, 1890, was steadily inclined downward, contrary to expectation, the unexpected may also repeat itself in 1891, and the scale become an ascending one, though we fail to learn of any actual reasons to-day why this should be the case. The market is absolutely featureless. Prices do not go further down, but the few small transactions show no improvement whatever. Furnaces are quiet as far as sales go. A forcing of metal at present would have to be at considerably lower figures, which means actual loss. We quote the market nominally as follows:

Lake Superior Charcoal, all numbers	$19.50 @ $20.00
Lake Superior Coke, Bessemer	18.50 @ 18.75
Katahdin (Maine Charcoal)	23.50 @ 24.00
Lake Superior Coke Foundry, all ore	18.00 @ 19.00
Ohio Blackband (40 per cent.)	18.25 @ 18.75
Southern No. 1	16.00 @ 16.50
Southern Gray Forge	14.25 @ 14.75
Jackson County (Ohio) Silvery,	18.50 @ 19.00
Connellsville Coke	4.65 @

St. Louis.

OFFICE OF *The Iron Age*, 214 N. Sixth st., ST. LOUIS, January 5, 1891.

Pig Iron.—The first week of the year fails to show any material change over the last week of 1890. The market is stagnant, and very little has occurred that is worthy of note. The year just closed has been to a great extent a disappointing one, and prices reached their lowest level during December. The year opened with flattering prospects, but soon gave evidence that the foundation was weak, and prices gradually began to weaken, and continued so clear through the entire year, with occasional rallies caused by heavy purchases and the action of furnacemen, who began to accumulate stock on the banks rather than go below certain figures. To sum the matter up, the year 1891 opens dubiously, but it is hardly reasonable to suppose that prices can go very much lower without forcing a majority of the furnaces to shut down. The temptation to sell at a loss rather than blow out is strong, and no doubt many will do so should the present condition of affairs continue to exist. Referring more particularly to the week under review, it is difficult to note any change either in prices or demand. There is some inquiry for deliveries during the first part of the year, but, as a rule, furnacemen are not disposed to figure on orders of this character. The strike in the Alabama district is still on, and there seems to be little chance of any immediate settlement. Some of the furnaces have been compelled to close down, while others have gone on in the even tenor of their way, and from the amount of Iron they are producing one would suppose they were exempt from the effects of the strike entirely. The local demand is of the hand to mouth character, and prices as quoted herewith could be shaded on desirable orders. We quote as follows for cash, f.o.b. St. Louis:

Southern Coke, No. 1 Foundry,	$15.50 @ $16.00
Southern Coke, No. 2 Foundry,	14.50 @ 15.00
Southern Coke, No. 3 Foundry,	14.00 @ 14.50
Gray Forge	13.50 @ 14.00
Southern Charcoal, No. 1 Foundry	17.25 @ 17.75
Southern Charcoal, No. 2 Foundry	16.75 @ 17.25
Missouri Charcoal, No. 1 Foundry	16.00 @ 16.50
Missouri Charcoal, No. 2 Foundry	15.25 @ 15.75
Ohio Softeners	17.75 @ 19.25

Bar Iron.—Business for the past week has been light. Mills are looking for an early revival of trade and do not anticipate more than a week's dullness at the most. Prices are still inclined to be weak, in sympathy with Pig Iron, but with anything like a steady demand a fair average price is likely to be maintained. Lots from mill are quoted at 1.77½¢ @ 1.80¢; small lots from store are quoted at 1.90¢.

Barb Wire.—There is no particular change to report; trade has fallen off a little during the past week, but is still of

such dimensions as to keep the mills fairly well employed. The year just closed has been entirely satisfactory, so far as volume of business is concerned, but prices have been somewhat disappointing. With a continuation of the present steady demand through the months of January and February, a period which is usually the dullest in the year, will no doubt have a benefitting influence on prices as soon as the spring trade fairly opens. At the moment we quote as follows: Painted, 2.80¢; Galvanized, 60¢ additional. Carload lots 5¢ ℔ cwt. less than above prices.

J. K. Pollock, formerly secretary of the Norton Iron Works, Ashland, Ky., has connected himself with Rogers, Brown & Meacham, in the capacity of manager of their St. Louis house. Mr. Pollock is well known to the trade throughout the West, and is an experienced iron man.

Chicago.

(By Telegraph.)

Office of *The Iron Age*, 50 Dearborn street, CHICAGO, January 7, 1891.

Trade prospects are improving as the financial situation grows brighter, but business is adjusting itself to a lower range of values. Prices continue to show a downward tendency, notwithstanding greater activity in nearly every line. An upward movement is not to be expected until consumption is clearly seen to have overtaken production. The history of former epochs of depression will probably repeat itself in the continued reduction of prices until they are below cost, which will force weak establishments to close, thus restricting production. The opinion is held by many that this month will see the depth of the depression, to be followed by gradual recovery, but others are not so sanguine and look forward to a dragging market for some months.

Bar Iron.—Inquiries show a decided increase, and considerable activity is promised in car work. A number of sales of Car Iron have been made since last report, one of them covering 1200 tons, at 1.70¢, flat. Jobbers are inclined to stock up also, and report that mills with which they have contracts are slow in filling specifications. Local manufacturers quote mill lots at 1.70¢ @ 1.75¢, Chicago, and would probably do even better on desirable orders. Valley mills quote 1.65¢, at mill. Store prices now range from 1.90¢ to 2¢, full extras.

Pig Iron.—The demand for Coke Iron is being supplied almost wholly by local makers, who are booking numerous orders, of which, however, very few call for large quantities. Coke iron is now cheaper in this market than at any previous time. Still Iron is never so cheap but that consumers expect to buy it cheaper, and many are holding off in the belief that prices will soon be lower. This is not an unreasonable view to take with the prospect of reduced prices of Coke and Ore, which seem to be inevitable, and which will cheapen the cost of producing Pig Iron. Those who desire Southern Coke Iron for mixture find no weakness in that direction. The Coal miners' strike seems to be as far from settlement as ever, and representatives of Southern furnaces here are instructed not to press sales, as the furnace companies will not be able to more than fill such orders as they now have. A glance at our quotations will show how cheaply Southern Iron would have to be sold to compete with Northern Iron, if the makers desired to secure much business. Lake Superior Charcoal is quite weak again in consequence of the efforts made to capture some good-sized contracts which have come up. It is stated on good authority that close, sharp buyers could make their choice of a number of brands at $18. This price is unusually low for the season and causes much speculation as to the probable price in the summer, but by that time the production will be considerably curtailed if there is not a speedy improvement.

Lake Superior Charcoal	$18.50 @ $19.00
Local Coke Foundry, No. 1	15.00 @ 15.50
Local Coke Foundry, No. 2	14.50 @ 15.00
Local Coke Foundry, No. 3	14.00 @ 14.50
Local Scotch	16.50 @ 17.00
American Scotch	18.25 @ 18.75
Southern Coke, No. 1	16.25 @ ....
Southern Coke, No. 2	15.25 @ 15.75
Southern Coke, No. 3	14.25 @ 14.50
Southern, No. 1, Soft	15.25 @ 15.75
Southern, No. 2, Soft	14.75 @ ....
Southern Gray Forge	14.50 @ ....
Southern Mottled	14.00 @ 14.50
Tennessee Charcoal, No 1	18.50 @ ....
Alabama Car Wheel	22.25 @ 23.50
Coke Bessemer	17.00 @ ....

Structural Iron.—Intending buyers of Beams are threatening manufacturers that they will import foreign Beams if the price is not reduced, but little heed is given to them. Numerous orders are in sight, and the outlook is very encouraging. Quotations, f.o.b. Chicago, in carload lots, are as follows: Angles, 2.35¢ @ 2.40¢; Tees, 2.90¢ @ 3¢; Beams, 3.20¢; Universal Plates, 2.45¢ @ 2.50¢; Sheared Plates, Iron, 2.50¢ @ 2.60¢; Steel, 2.60¢ @ 2.70¢. Beams sell from store in small lots at 3.70¢, but Angles and Tees at 10¢ @ 15¢ ℔ 100 above carload prices.

Plates, &c.—Dealers report a fair business in progress, but nothing heavy. Mill prices are lower on large specifications, but quotations here remain the same at: Nos. 10 to 14 Iron Sheets, 2.75¢ @ 2.80¢; Steel Sheets, 3½¢ @ 3¼¢; Tank Iron, 2.60¢ @ 2.70¢; Tank Steel, 2.80¢ @ 2.90¢; Shell Iron or Steel, 3.25¢; Flange Steel, 3.50¢; Fire Box Steel, 4.25¢ @ 5.5¢; Boiler Rivets, 4¢ @ 4.25¢; Boiler Tubes, 45 % off for 1¾ inch or less; 50 % off for 2 to 4 inch.

Sheet Iron.—Considerable business is offering in Black Sheets. One inquiry calls for 700 tons of Steel Sheets. No. 27 Common Iron can now be had 2.85¢ at mill, while the store price is still 3.30¢ @ 3.40¢. Galvanized is quoted at 62½ % for Juniata, with a limited demand.

Merchant Steel.—The first month of the year opened up well, so far as volume of business is concerned. A great improvement is shown on the trade of December. Railroad orders are being entered after a long quiet spell. Prices are irregular, being reported firmly held by some and weaker by others, but so far quotations are unchanged. Tire Steel, 2.50¢ @ 2.60¢; Open Hearth Spring, 2.65¢ @ 2.75¢; Open Hearth Machinery, 2.50¢ @ 2.75¢; Bessemer Machinery, 2.25¢ @ 2.30¢; Crucible Spring, 3.50¢; Tool, 7¢ and upward; Plow Steel, 2.50¢ @ 2.60¢; Crucible Sheets, 7¢, 8¢ and 10¢.

Steel Rails and Fastenings.—A more encouraging condition of affairs is reported in Steel Rails. Some orders have been taken for future delivery, and it now looks as if the lowest point in the depression had been touched in this branch. Business is confined entirely to Rails for replacements. Eastern Pennsylvania mills are competing for some Western business, but only in territory which can be reached by lake navigation. Prices range from $30 to $31.50, according to time of delivery, the lowest figures being for winter work. Splice Bars are now quoted at 1.95¢ @ 2.05¢ for Iron and 2.15¢ @ 2.25¢ for Steel. Spikes are lower and quoted at $2.15 @ $2.20, from stock. Track Bolts are also cheaper, Hexagon Nuts being quoted at 3.05¢.

Old Rails and Wheels.—Everything is lower in this line. Old Iron Rails are very quiet and could probably be bought at $22.50. Old Steel Rails, short lengths, are not worth over $14, but long lengths are quoted at $18.50 @ $19. A lot of 200 tons Car Wheels was sold at $18 and for others $17.50 was bid, but some dealers consider them worth but $17.

Scrap.—There are plenty of offerings, with but little inquiry. Stocks are, however, in strong hands, and as consumers' yards are known to be bare, the dealers are resisting any further decline. Dealers' quotations are as follows ℔ ton of 2000 lb: No. 1 Railroad, $19; No. 1 Forge, $18; No. 1 Mill, $14; Fish Plates, $22; Axles, $25; Pipes and Flues, $14; Horseshoes, $18; Cast Borings, $8; Wrought Turnings, $10.50; Axle Turnings, $13; Machinery Cast, $13; Stove Plates, $9; Mixed Steel, $10.50; Coil Steel, $16; Leaf Steel, $17, and Tires $18.

Metals.—The market for Pig Lead is firmer, under an increased demand from consumers. Values are strong at 4.25¢ bid and 4.30¢ asked. Spelter is unchanged at 5.70¢. Lake Copper has declined to 15¢. Casting brands Copper are down to 13¢ for carload lots, but close buyers may be able to do a little better.

Financial.

The expected stringency in making the annual statements was not realized and the new year opened hopefully. For the time being there appeared to be little prospect of disturbing legislation at Washington; there was a growing ease in money, indications of returning confidence, and the meeting of railroad presidents appointed for January 8 was anticipated with satisfaction as affording at least a reasonable prospect that all the railroads would be united in a single advisory board. As the week closes, however, the kaleidoscope suddenly turns and the silver coinage question is brought immediately to the front. Assuming that the Free Coinage bill will pass the Senate, an impediment is looked for in the House, together with the prospect of a veto, should other obstacles be overcome. And in regard to the presidents' meeting, fears are entertained that Jay Gould's opposition to the joint use of the bridge at Omaha may bring all proceedings to nought. Under the new freight tariffs, which went into effect January 1, the first-class rates from New York to Kansas City, by the direct lines, is $1.37 instead of $1.32.

On the Stock Exchange since the beginning of the year there is an improved feeling, but no radical change. The absence of any important default in interest payments due January 1, outside of that by the Omaha and St. Louis Company, had a favorite effect. The reinvestment of funds recently disbursed was also a feature, more outside interest being manifested. For several days Reading and Lackawanna have been prominent, and there was more strength in the Villard properties, due to the settlement of Decker, Howell & Co., Villard's bankers, who pay all demands in full. On Tuesday the advance which has been in progress for several days received a check, and it was noted as significant that while stocks were weak silver bullion certificates were buoyant, and when stocks were advancing the certificates fell off. Partly in consequence of continued selling, but mainly because of a 2 % money market in London, there was a further advance in sterling bills. The rise was assisted by the canceling of over $1,000,000 of Clearing House certificates and the pronounced ease in money. The money in circulation increased $24,000,000 in December and $98,400,000 during 1890, the total at the present time being the largest on record.

Exports during the week were $8,203,000, an increase of $4,000,000 compared with January, 1890.

United States bonds are quoted as follows:

U. S. 4½s, 1891, registered	103¾
U. S. 4½s, 1891, coupon	103¾
U. S. 4s, 1907, registered	121
U. S. 4s, 1907, coupon	121
U. S. currency 6s, 1895	109
U. S. currency 6s, 1896	112

The merchandise markets manifest the quietness usual at this season of the year. Breadstuffs are dull and irregular, with larger receipts at Western points and more export inquiry. Provisions have advanced since Saturday, with some buying orders, but spot stuff is dull. Spot cotton is moderately active at a fractional advance. Ocean freights quiet.

The weekly statement of the Associated Banks showed an increase in reserve of $851,950. The banks now hold $8,576,775 in excess of the legal requirements. The changes in the averages show an increase in loans of $356,700, an increase in specie of $850,900, an increase in legal tenders of $1,146,500, an increase in deposits of $4,582,800, and an increase in circulation of $9900. The gain is supposed to have been caused by the release of money previously withdrawn, perhaps for speculative purposes, as well as in anticipation of the January disbursements, which at this center are the largest on record, amounting to over $100,000,000. The total interest and dividends paid on bonds and stocks by corporations during January alone is nearly $69,000,000. The total amount of securities listed on the New York Stock Exchange during the year 1890 was $1,028,013,407. Of this amount $599,186,810 were bonds and $428,825,797 stocks. The net increase of securities listed for the year is $362,680,874, an increase of $134,464,035 compared with the previous year.

The demand for commercial paper is better, chiefly from out-of-town institutions, and improvement is expected as loans now out shall mature. Prime endorsed bills receivable are quoted at 6 % @ 7 %, and first-class single name paper at 7 % @ 8 %. New York exchange in Chicago is 70¢ @ $1000 premium, which indicates that money is coming this way.

Foreign exchange advanced sharply to $4.83 @ $4.86, mainly due, as reported, to naval preparations by the United States and England, connected with the Behring Sea dispute. London reports cheap money. Nevertheless, the assertion that the Bank of France has called for the repayment of its loon to the Bank of England remains uncontradicted and seems altogether plausible from the fact that the new French loan is to be brought out on January 10.

In a list case brought by Colorado operators, the superintendent of the mint refused to receive a silver bar for private coinage into dollars, and his position was sustained at Washington. At present the market value of silver bullion is $1.03½ per ounce, fine, while the mint value of an ounce is $1.29 $\frac{29}{100}$. When the Government buys the bullion it pays the market bullion price and makes the difference, which is the "seignorage," between that price and the legal tender value, and which the owners of the silver brick wish to secure for themselves.

The net decrease of the public debt during December, as shown by the Treasury books, is $11,005,397. The amount of 4½ % bonds outstanding has been reduced within the month from $61,189,000 to $59,177,550, and the amount of 4 % bonds outstanding has been reduced from $568,204,100 to $559,742,700. The receipts for the month have been larger than for December, 1889, notwithstanding the operation of the new Tariff act. The total National bank circulation outstanding is now $177,155,539, a decrease during the calendar year 1890 of $10,923,379. The decrease in circulation based on United States bonds, however, has been only $2,082,079, leaving the present circulation based upon bonds, $125,660,361.

The bank clearings for 1890 at 37 cities in the United States aggregate $59,585,636,458, or 6.7 % more than in 1889, 21 % more than in 1888, and 16 % more than in 1887. The aggregate for 1890 was $37,458,607,608, or 63 % of the whole, showing a gain over its total in 1889 of 4.3 %, of 20 % over 1888, and 12 % over 1887. Other cities show a relatively more rapid growth of bank clearings.

During the year 1890 29 railroads in the United States, representing 3825 miles of road and about $182,500,000 of funded debt and capital stock, were sold under foreclosure. Twenty-six railroads, representing nearly 3000 miles of road and over $100,000,000 of securities, went into the hands of receivers.

The net debt of New York City is $97,875,000, showing a reduction for the year of $958,000.

Pittsburgh.

Office of *The Iron Age*, Hamilton Building, Pittsburgh, January 6, 1891.

Pig Iron.—The dullness noted for several weeks past continues; no demand deserving of the name, consumers still refusing to buy a ton more than they can possibly help, and prices continue weak and unsettled. The action of the furnacemen in the Shenango Valley will have a good deal to do with the market in the near future; if they blow out, as theatened, unless the coke men and railroads comply with their demands, a stiffening up would no doubt be the result, as consumers, in that event, being low in stock, would be anxious to replenish. The Coke operators say they will make no further reduction in the price of Coke, and the railroads show no disposition to make a reduction in freight rates. There has been an overproduction in this district for some time past, and a shutdown for a time by these furnaces would have a good effect on the market. The blowing out, as proposed, would also tend to bring the Coke men and railroads to terms quicker than anything else. It is very generally conceded that there is no margin for profit at present prices, and as long as production is kept in excess of consumption, as has been the case for some time past, there is not much show for an advance. We quote as follows:

Neutral Gray Forge	$14.50	@ $14.75	cash.
All Ore Mill	15.00	@ 15.50	"
White and Mottled	14.00	@ 14.25	"
No. 1 Foundry	16.75	@ 17.00	"
No. 2 Foundry	15.75	@ 16.00	"
No. 3 Foundry	15.25	@ 15.50	"
No. 1 Charcoal Foundry	23.50	@ 24.00	"
No. 2 Charcoal Foundry	21.00	@ 21.50	"
Bessemer Iron	15.75	@ 16.00	"

In regard to Bessemer Iron reports are conflicting; it is now being offered freely at $16, cash, and rumors obtain that sales have been made as low as $15.50. So far as we are advised, none of our city furnaces would sell under $16. In regard to Forge Iron, there appears to be nothing doing, but it is probable that good brands could be had at our inside quotation.

Muck Bar—Is as dull as ever and prices continue weak; in the absence of buyers may be quoted at $28 @ $28.50. Contracts were made some time ago for January, February and even March at $31 @ $31.50, some of which will doubtless be settled by paying a cash difference.

Manganese—Continues very dull, but prices remain about as last quoted. Domestic 80 %, $65 @ $66. Since the purchase of the Allegheny Bessemer Works by the Carnegie interest there has been no demand here worthy of the name for Spiegel.

Manufactured Iron.—There has been no material change in the situation. New business continues light, but some of the mills are still pretty well employed in working up old contracts Prices are weaker, in sympathy with raw material, and concessions would no doubt be made for desirable orders, which have been rather scarce of late. We are advised of some late sales of Skelp Iron at 1.80¢ for Grooved and 2.10¢ for Sheared, 60 days, 2 % off for cash. It is intimated that large contracts for future delivery could be placed below prices quoted.

Nails.—There is very little doing in Cut Nails, and not likely to be for some time to come. Prices continue weak and irregular, and to manufacturers very unsatisfactory. Wire Nails are also weak, but there appears to be more inquiry than for Cut Nails. Wire Nails may be quoted at $2.05 for 5000 and 10,000 keg lots, f.o.b. at makers' mill, 60 days, 2 % off for cash, and $2.10 @ $2.15 for smaller lots.

Wrought Iron Pipe.—There is a good degree of activity for the season, but new business is not offering as freely as it did some time ago. No change in prices. Discounts on Black Butt-Weld Pipe, 47½ %; on Galvanized, do., 40 %; on Black-Lap, 60 %; on Galvanized do., 47½ %; Boiler Tubes, 1¾-inch and smaller, 45 %; 2-inch and larger, 50 %; Casing, all sizes, 50 %. The January meeting of the Pipe Association will be held in New York.

Structural Iron.—There is some inquiry, which it is expected will lead before long to the placing of new business. Our manufacturers are still pretty well employed in working up old contracts. There has been no further change in prices, but the tendency is downward, in sympathy with raw material. We continue to quote Channels and Beams at 3.10¢; Angles, 2.25¢; Steel Bridge Plates, 2.45¢; Universal Mill Plates, Iron, 2.25¢; Refined Bars, 1.90¢ @ 1.95¢.

Steel Plates.—There has been no change in prices since our last report; mills pretty well employed: Fire Box, 4.25¢ @ 4.50¢; Flange, 2.90¢; Shell, 2.70¢; Tank, 2.35¢.

Merchant Steel.—No change in prices, and trade only moderate. Tool Steel, as to quality and brand, 8¢ and upward; Crucible Spring 4¢; Crucible Machinery, 5¢; Open Hearth Steel, base sizes, 2¾¢ @ 3¢; Bessemer Machinery Steel, 2.40¢; Tire Steel, 2.55¢.

Wire Rods.—Continue weak, with buyers for the present very scarce. We quote at $36 @ $37, cash, at makers' mill. manufacturers are refusing to accept less than $37, but we hear of one offer to sell at slightly under $36. It is claimed that $36 does not cover cost of production, but it often occurs than an article is sold for less than cost. It is not what an article costs that makes the market, but what can be obtained for it.

Old Rails.—There have been no sales reported here for several weeks, and in the absence thereof it is difficult to give reliable quotations. Rumor has it that sales have been made as low as $24.50 @ $25 to valley consumers, but in regard to the correctness of these rumors we cannot vouch. Old Steel Rails may be quoted nominally at $17.50 @ $18.50.

Billets and Slabs.—There appears to be no improvement in the demand for Billets, and prices continue weak, but unchanged, $25.50 @ $26. So far we are advised there have been no sales below $25.50, but that a desirable order could not be placed under the price quoted we are not prepared to state. In regard to Nail Slabs, a broker made a sale of 1000 tons, but he said the price was so low that he was ashamed to make it public.

Railway Track Supplies.—Trade continues light, while prices remain un-

changed. Spikes, either Iron or Steel, $2.10, 30 days, f.o.b. at works; Iron Splice Bars, 1.95¢ @ 2.05¢; Steel Splice Bars, 2.10¢ @ 2.15¢; Track Bolts, 2.90¢ with Square and 3¢ with Hexagon Nuts.

Steel Rails—Are quoted nominally at $27.50 @ $28.50, cash, at mill, according to character of order and delivery.

Old Material.—There is no improvement in demand, and prices continue weak and unsettled; we hear of some small sales of No. Railroad Wrought Scrap at $21, net ton, but a round lot could probably be bought for less; we are also advised of a sale of Car Wheels at $18, gross, delivered to a Mahoning Valley consumer, equal to about $17, Pittsburgh; we also hear of a sale of 2000 tons of Steel Rail and Bloom Ends at $17, gross ton, at maker's mill.

Connellsville Coke.—The prices noted in our last report went into effect January 1, as follows: Furnace Coke, $1.90; to dealers, $2.15; Foundry Coke, $2.30; Crushed Coke, $2.50 to dealers and $2.65 to consumers, all delivered on cars at ovens. H. C. Frick is credited with having said that there will be no further reduction in the price for the present at least.

(*By Telegraph.*)

While business continues quiet, there is a more cheerful feeling in Iron circles, and the indications are that trade will improve before the close of this month. A good deal of anxiety is manifest in regard to the action of the valley furnacemen as to blowing out, as threatened, unless their demands from Coke men and railroads are complied with. There has been unexpected activity in Old Material, but at lower prices. Sales 900 tons No. 1 Railroad Wrought Scrap at $20, net ton, and 300 tons Cast Scrap at $14.50, gross ton. Old Iron Rails cannot be had under $26.50 @ $27, and there has been some inquiry within the past day or two.

Coal Market.

The Anthracite Coal trade is active for all the small steam sizes, but as a whole the market does not show that animation which producers desire, although the prevalence of a low temperature has hastened consumption and the general tone is improved. The outlook is pronounced promising for the year 1891, from the producers' standpoint, as all interests are supposed to be working in harmony. The total output for the year to December 27 was 3,546,250 tons, an increase of 285,000 tons compared with 1889. Despite the increase noted the accumulation at tidewater is reported to be less than it was a year ago. With production limited to 2,500,000 tons for January, as fixed at the recent meeting of sales agents, producers hope to maintain prices at least moderately remunerative. The price-list stands: For Broken $3.65, Egg $3.90, Stove $4.15, Chestnut $3.75, f.o.b. Reading Fine White Ash at Port Liberty is quoted at $3.85, Egg $4.10, Stove $4.40, Chestnut $3.95. Pea is quoted $2.90 @ $3.15 and Buckwheat $2.00 @ $2.15, f.o.b., with an active demand, partly due to the decision of the operators to make no more "Small Stove." The collieries are able to make but a limited amount of each size, and they would not sell "Small Stove" unless orders were made at the same time for other kinds. At length the retailers, middlemen and collieries discovered that the "Small Stove" was a nuisance. Broken and Egg are both sold below the circular.

Bituminous Coal is active and firm at about $3.50. The entire Beech Creek Railroad, so long in controversy, was conveyed to the New York Central for $5,000,000, and the deed put on record. Short branch lines will be built to make connections. The contemplated strike in the Clearfield region was postponed, after a conference with the operators. A 16-inch vein has been struck at Mt. Carmel. Fifteen coal barges to be towed astern in the Eastern trade are building at Perth Amboy for the Reading Company. They are 195 feet long, with a capacity of 1600 tons, and each cost $27,000.

New York.

Office of *The Iron Age*, 96-102 Reade street,
NEW YORK, January 7, 1891.

It cannot be denied that the feeling prevalent in the Iron trade is one of unusual gloom. It is admitted by some of the greatest authorities that the situation, so far as the near future is concerned, shows less brightness than it has for many years past. While prices are low, and are in the majority of lines close to the lowest cost attainable by pruning all items, there is a disposition among the strongest concerns to crowd the weaker into suspension of operations, even if it be necessary to cut under cost. A great restriction of production has been forced or is about to come from the stoppage of the Alabama furnaces and through the movement among the valley men. This will amount to at least 120,000 tons a month. But the uncertain feature is whether the plants now idle or about to go out of blast will not promptly return to work as soon as they have secured what they are fighting for now. One danger in the more distant future is the possibility of a strike in the Connellsville Coke region, where the men have formulated demands for a heavy advance in the face of the present depression.

American Pig.—While the market is quiet, its position has somewhat improved through the fact that Southern brands are offered less urgently. It is clear that the Alabama strike is at last beginning to tell. On the other hand, it is reported, by good authority, that the leading Lehigh company are selling on the basis of $17.50 for No. 1 Foundry. We quote standard Northern brands $16.75 @ $17.50 for No. 1, $16 @ $16.50 for No. 2 and $14.50 @ $15.50 for Gray Forge.

Manufactured Iron and Steel.—There is the usual amount of talk concerning Foreign Beams which is common at the beginning of the year, when the large Architectural Iron works make their contracts. German Beams can be laid down at 2.65¢ @ 2.75¢, while American continue to be quoted 3.10¢, but we fail to hear that the figures are attractive to buyers. The figures which are now coming out concerning the prices at which some of the elevated structures have been taken during the past few months indicate that the lowest level has been reached for this class of work. We understand 3.10¢ erected has been shaded for an important piece of work. We quote Angles, 2.05¢ @ 2.10¢; Sheared Plates, 2.20¢ @ 2.25¢; Tees, 2.6¢ @ 2.75¢, and Beams and Channels, 3.1¢, on dock. Steel Plates are 2.25¢ @ 2.30¢ for Tank, 2.55¢ @ 2.65¢ for Shell, and 2.85¢ @ 3¢ for Flange, on dock. Bars are 1.75¢ @ 1.9¢, on dock.

Steel Rails.—While the negotiations among the Rail mills have not been formally abandoned, there is not as much hope of a successful issue now as there has been. Still, the makers have before them so gloomy an immediate future that the differences may still be adjusted. In the absence of any business offering, the majority of Eastern mills quote $28 and upward. There is now very little work going on. Edgar Thomson is idle, owing to the strike, but is expected to resume soon. Illinois is doing nothing, Allegheny is on Billets, Pennsylvania will soon close down for repairs, Scranton is running single turn all week, and Lackawanna is working three days full. It is reported that one of the Eastern mills has for some time past run almost entirely on Light Rails to stock, and has now accumulated on its banks as much as 10,000 tons of Light Sections of all weights. It may be readily conceived what an effect the stoppage of so many mills is having on the consumption of Pig Iron, when it is considered that the smallest of the works named converts 800 tons a day. It is not too much to say that the works named use when running between 5000 and 6000 tons of Pig per day. Under the circumstances, the weakening of Bessemer Pig is not astonishing. It is stated by the representative of one of the large Rail mills that large orders must soon be placed. Usually the Pennsylvania Railroad by giving out its orders gives the signal for buying to a good many roads. Thus far nothing has been heard from that quarter. The views of buyers are indicated by offers to purchase at $26, at mill, and it is argued by them that this figure is not unreasonable, considering the fact that Soft Steel Billets have sold in the Pittsburgh district at $25.

Spiegeleisen and Ferromanganese.—The slackness of the Rail trade keeps the mills out of the market longer than expected, the majority having a considerable supply on hand. The market remains lifeless at $29 @ $29.50. In Ferromanganese the principal feature remains the resales of small lots from second hands, the amount thus still available being reported to be quite large in the aggregate. We quote $61.50 @ $62.50.

Billets.—In domestic Billets the market is quiet. So far as foreign Billets are concerned, to which manufacturers look who do a re-export trade, it is reported that there has been an advance in Germany, ranging from 2/6 to 5/. Only recently German Billets were bought at 86/, less 2½ % at shipping port. It is believed that the firmness is due to orders received from Scotland, where the strike has practically led to a suspension of manufacturing.

Charles Hubbard & Co. of 284 Pearl street have been made sales agents for the New York market for the Temple brand of Pig Iron, manufactured by the Temple Iron Company, of Reading, Pa.

Metal Market.

Copper.—The market for Lake Superior product is still unsettled. Home consumers seem to be as reluctant now as they were a week ago about placing orders for supplies for delivery any considerable time ahead at the prices the mining companies endeavor to obtain, and export business, to all accounts, is of unimportant volume. This condition of affairs seems likely to continue, inasmuch as consumers consider 15¢ too high a price in view of current report as to the amount of supply carried over, the present heavy output of the mines, to say nothing of the condition of the market for various manufactured goods. Lake Copper may be secured at 14¼¢, possibly at 14⅛¢, from second hands, if indeed not from some producers. For other varieties lower prices have been quoted, but the concessions made do not appear to have stimulated business in the slightest degree. Arizona Ingots may be secured at 13¼¢ @ 13⅛¢ and common casting brands at 12¼¢. Offers of even money on either class of the

metal would likely be accepted in the event of orders calling for round lots.

Pig Tin.—There has been an improvement of ¼¢ @ ⅜¢ ₱ lb in prices of Straits Tin, due chiefly to a turn for the better in the London market, with the change most decided on spot stock. Affairs have not shaped in a manner that would excite greater speculative interest, however, and purchases by jobbers and consumers have been only fair. At present there are about 1000 tons of Tin in store here, and recent arrivals leave about 1000 tons at dock also. There are due to arrive this month another 1000 tons out of upward of 2500 tons afloat, and the prospects are thus that the January direct supply will be so heavy that little will be needed from London. The tendency at the close was therefore rather more in buyers' favor, there being no considerable short interest in the market. Ten-ton lots on spot or for delivery this month could have been had at 20¼¢, net cash, at the close. February and later deliveries were only 20.10¢ bid. For ordinary jobbing parcels out of store the range of 20⅜¢ @ 20½¢ was quoted.

Pig Lead.—In prices of domestic Pig Lead there has been an advance of about ¼¢ ₱ lb during the past few days, and the market is looking quite firm at the present time, although quiet. The cause for improvement cannot be traced to any decided increase in the demand. As a matter of fact, the advance would appear to be chiefly in the nature of a natural reaction from the late extreme depression, assisted, perhaps, by some little manipulation on the part of representatives of the smelters. Sales to the extent of about 250 tons at from 4¼¢ up to 4.45¢ were reported, and at the time of writing this report there are few sellers at less than 4½¢. In the St. Louis market a rise to 4.05¢ has taken place, but prices in the European market are somewhat lower than they were a week ago.

Spelter.—Spot supplies are still moderate, and prime Western is not secured at under 6¢ @ 6⅛¢. Prompt shipments are also quoted firm at 5.90¢, but February shipment may be secured at 5.85¢, and March at 5.80¢. The demand has been moderate throughout the week.

Antimony.—The demand at present is chiefly for small parcels and prices are barely steady. About 18¾¢ is quoted, for Cookson's, 16¾¢ @ 17¢ for L.X. and 16¼¢ @ 16¾¢ for Hallett's.

Tin Plate.—Higher prices rule all along the line and the market is strong at the advance. Very little improvement in spot business is noted, but large purchases, chiefly of Cokes, have been made by dealers and heavy consumers for delivery prior to the date fixed for the new tariff to go into effect. Bright Charcoals and Terne Plates have been given attention, but were not purchased with as much freedom as Coke finish Plates. Quotations for large lots on the spot are as follows: Coke Tins—Penlan grade, IC, 14 x 20, $5.35; J. B. grade, do., $5.50. Bessemer do., $5.37½ Stamping Plates—Bessemer Steel, Coke finish, IC basis, $5.45; Siemens Steel, IC basis, $5.50; IX basis, $6.50. IC Charcoals—Melyn grade, $6.25; for each additional X add $1.50; Allaway grade, $5.87½; Grange grade, $6; for each additional X add $1. Charcoal Ternes—Worcester, 14 x 20, $5.50; 20 x 28, $10.80; M. F., 14 x 20, $7.87½; do., 20 x 28, $15.50; Dean, 14 x 20, $5.25; do., 20 x 28, $10.25; D. R., D. grade, 14 x 20, $4.80; do., 20 x 28, $9.75; Mansel, 14 x 20, $4.90; do., 20 x 28, $10; Alyn, 14 x 20, $5.; do., 20 x 28, $10; Dyffryn, 14 x 20, scarce; do., 20 x 28, $10.50. Wasters—S. T. P. grade, 14 x 20, $4.75; do., 20 x 28, $9.40; Abercarne grade, 14 x 20, $4.65; do., 20 x 28, $9.37½.

New York Metal Exchange.

The following sales are reported:

FRIDAY, January 2.

25 tons Tin, January ..... 20.15¢

TUESDAY, January 6.

10 tons Tin, January ..... 20.15¢
(With seller's right to treble.)
25 tons Tin, February ..... 20.30¢

British Iron and Metal Markets.

[*Special Cable Dispatch to The Iron Age.*]

LONDON, WEDNESDAY, January 7, 1891.

In Pig Iron warrants there has been little doing the past week. The closing of the Exchanges during the New Year's holidays served to check outside interest more or less, and since then nothing has occurred to stimulate speculation. Scotch have sold chiefly at 46/3 @ 46/9, showing steadiness in the face of light trading, but on Cleveland there has been a decline to 41/7½, and Hematites sold off to 52/9.

Pig Tin.—Prices declined somewhat early in the week under the influence of pressure to realize on cash parcels, but subsequent free purchases of futures brought about an improvement, and a reaction to £91. 12/6 @ £91. 15/ for spot and £92. 10/ for futures took place. This was helped in some degree by statistics showing a decrease of 644 tons in the visible supply last week. Australian Tin is scarce, and the general position is considered favorable for better prices. Today the market was rather weaker.

Copper warrants, after a temporary decline, have improved to £52.15/, spot, on a very fair business, but while the consumption is still large, fears of heavier supplies from America restrain further upward movement of prices for the present. From the highest point 15/ reaction has taken place. Prices for furnace material have been somewhat depressed by the sale of 10,000 tons Anaconda Matte at 10/ and 250 tons Anaconda Argentiferous at a low price, not made public. The arrivals last month were 12,767 tons, but spot stocks have decreased 1056 tons, and the visible supply was 74 tons less January 1 than a month previous. Chili charters the last fortnight were 1000 tons.

Despite the intervention of the holidays there has been further improvement in the Tin Plate market and prices are again higher. From the United States there has been a large demand, chiefly for Bessemer Steel Coke Finish Plates, at up to 18/, and buyers have manifested eagerness to secure supply for delivery prior to the new tariff going into effect.

The demand for Steel Ship Plates has moderated, and makers now offer to sell at £6. 7/6, f.o.b. Barrow. For other forms of Steel the inquiry is also lighter, and prices for Billets and Slabs are lighter. Spiegeleisen is rather weaker.

Cleveland Pig.—Business continues quiet and prices have further receded. Makers quote at 42/ for No. 3 Middlesborough, f.o.b

Scotch Pig Iron.—The market remains dull, and prices are still irregular.

No. 1 Coltness,	f.o.b.	Glasgow	..
No. 1 Summerlee,	"	"	68/
No. 1 Gartsherrie,	"	"	..
No. 1 Langloan,	"	"	..
No. 1 Carnbroe,	"	"	51/6
No. 1 Shotts,	"	at Leith	..
No. 1 Glengarnock,	"	Ardrossan	..
No. 1 Dalmellington,	"	"	59/6
No. 1 Eglinton,	"	"	48/

Steamer freights, Glasgow to New York, 1/: Liverpool to New York, 10/.

Bessemer Pig.—There is only a moderate trade, and prices are again lower. Makers quote 53/6 for West Coast brands, Nos. 1, 2 and 3, f.o.b. shipping port.

Spiegeleisen.—The demand has been slow, and makers offer at lower prices. English 20 % quoted at 97/6, f.o.b. shipping port.

Steel Rails.—There has been little new business, but prices remain steady. Heavy sections quoted at £4. 17/6 and light sections £5. 17/6 @ £6, f.o.b. at N. W. England shipping point.

Steel Blooms.—The demand moderate and prices rather lower. Makers quote at £4. 12/6 for 7 x 7, f.o.b. at N. W. England shipping point.

Steel Billets.—The movement is slow and sellers offer at lower prices. Bessemer, 2½ x 2½ inches, £4. 15/, f.o.b. at N. W. England shipping point.

Steel Slabs.—Lower prices named by makers, but business still light. Bessemer quoted at £4. 15/, f.o.b. at N. W. England shipping point.

Old Iron Rails.—There is very little doing. No further change in prices. Tees quoted at £3 @ £3. 2/6 and Double Heads £3. 5/ @ £3. 7/6, f.o.b.

Scrap Iron.—The market dull and prices unchanged. Heavy Wrought quoted at £2. 5/ @ £2. 7/6, f.o.b.

Crop Ends.—Demand continues very light. Bessemer quoted at £3 @ £3. 2/6, f.o.b.

Tin Plate.—The demand is still active and prices are strong throughout. We quote, f.o.b. Liverpool:

IC Charcoal, Alloway grade	19/ @ 19/3
IC Bessemer Steel, Coke finish	17/9 @ 18/3
IC Siemens " " "	18/ @ 18/6
IC Coke, B. V. grade	17/3 @ 17/6
Charcoal Terne, Dean grade	17/3 @ 17/6

Manufactured Iron.—There is no improvement in the demand and prices are still irregular. We quote, f.o.b. Liverpool:

	£	s.	d.		£	s.	d.
Staff. Marked Bars				@	9	0	0
" Common "				@	6	10	0
Staff. Bl'k Sheet, singles				@	7	10	0
Welsh Bars (f.o.b. Wales)	5	17	6	@	6	0	0

Tin.—Business moderate at the close; prices barely steady. Straits quoted at £91. 5/, spot, and £91. 17/6 for three months' futures.

Copper.—Fairly active movement today at lower prices. Merchant Bars quoted at £52 @ 52. 5/, spot, and £52. 15/ @ 53, three months' futures. Best Selected, £60.

Lead.—The market very quiet, prices rather lower, with £12. 17/6 quoted for Soft Spanish.

Spelter.—The movement slow, and prices again easier at £22. 10/ for Soft Spanish.

The Williams Aluminum Company of Newark, N, J., have reduced the price of their alloy from 10 cents to 5 cents a pound.

HARDWARE.

Condition of Trade.

Merchants and manufacturers are still to a good extent occupied in closing up last year's accounts and making their preparations for the spring campaign. The volume of current business is only moderate, as many retailers are still similarly occupied, and travelers being at home no pressure is brought upon them to order beyond their immediate requirements. Prices remain substantially as at our last report and the market is characterized by only a fairly firm tone. Comparatively few new lists or revision of discounts have been announced, but it will be observed in the detailed advices given below that some changes have been made. In a few lines there has been a good deal of activity, and some manufacturers are well supplied with orders. There is a general feeling of satisfaction with the outlook, and the indications point to a business large in volume during the coming season.

We give below special reports from Foster & Robertson, Portland, Ore., Bigelow & Dowse, Boston, and Farwell, Ozmun, Kirk & Co., St. Paul, which did not appear in our last issue:

Portland, Ore.

FOSTER & ROBERTSON.—With the view of closing up the year's business by January 1, Portland jobbers as a rule called in their travelers about the 15th of this month, and have since been busy taking inventory. The absence of our travelers from the road seems to have very little perceptible effect upon the volume of trade, as the mail orders seem to be somewhat larger than usual, and we are certainly as busy as at any time of the year, and our inventory work is sadly interrupted and interfered with.

Prices are generally at a standstill, and except a slight decline in Lead and Shot, there has been no change worthy of mention. The abandonment by the Union Pacific Railroad Company of all work on its new lines, that have been in process of construction during the year past, it was feared would prove a serious blow to the Pacific Northwest; but such is the solidity of this country, and so great are its undeveloped resources, that this action of the Union Pacific will have little or no effect upon our business.

The fight for supremacy on the part of the Portland jobbers during the last year or two has made life a burden to the representatives of Eastern jobbers in this field, and has led several Eastern houses to withdraw their travelers entirely. The outlook for the coming year indicates that the lot of the Eastern traveler on this territory will be more unhappy than ever before. Nothing but the refusal of the railroad companies to deal justly with the coast jobbers will save the Eastern jobber from being driven east of the Rocky Mountains.

Boston.

BIGELOW & DOWSE.—Last year and the year before we had but little snow or ice. This retarded trade in seasonable goods and every one was dissatisfied. This year we are having a real old fashioned New England winter. Three weeks previous to Christmas the weather was cold and skating was never better. The day following Christmas snow fell to a depth of 10 or 12 inches. Early in the season dealers would not buy seasonable goods, as every one had a stock on hand. Now these old stocks are sold and there is a brisk demand for Snow Shovels, Ice Chisels and kindred goods. Snow helps the lumbermen and stimulates the sale of Axes, Crosscut Saws, &c. We have asked many retail dealers the question "How is trade?" and the invariable answer is "It was never better."

St. Paul

FARWELL, OZMUN, KIRK & CO.—Up to December 24 trade continued good, since which time very little has been done in the way of sales. Taking inventory and settling up the year's business, however, will keep every one busy for some time. Taking the business for 1890, as a whole, it makes a very satisfactory showing, both as to amount of sales and prospective returns on amount of capital invested. Country merchants seem to think staple goods are very cheap, and considerable, inquiry has been made and some orders have been placed for Nails and Wire in car lots. On account of absence of snow and cold weather in this section some lines of trade have suffered considerable and, no doubt, large stocks of seasonable goods in some lines will have to be carried over to another season. The tight condition of the money market that prevailed for a time has somewhat improved, and we have to report very satisfactory collections of late. Farmers in the Northwest have generally realized good returns for their products of the past season, and, as a consequence, feel encouraged to put in a larger acreage the coming year.

Chicago.

(*By Telegraph.*)

The Shelf Hardware houses of this city have not all their salesmen on the road yet, but those who are out are meeting with good success in taking orders, and the new year opens up very well. Mail orders have seldom been so good as they were during the recent holidays, which shows the demand from consumers to be strong. Screw list has been changed and a new discount established, making an advance of about 7 per cent. on old prices. Tin Plate is firm, Roofing Plates being very scarce and likely to advance soon. The makers are loaded up with orders. Manufactured Copper is weaker, in sympathy with the raw article. Heavy Hardware jobbers report a good trade in their line.

St. Louis.

(*By Telegraph.*)

Business in the Hardware trade has not yet got fairly started. Traveling men are not all out and mail orders are only moderate. The movement in Wire Cloth, Wire Screens and Agricultural Implements is assuming a steady appearance and will likely improve within the next few weeks. Prices of all lines of goods are firm. Agricultural goods are a trifle higher than last year. Wire Nails are quoted at from $2.30 to $2.35 for lots from store. With the improvement in the general financial condition of the country collections are better than for some time past.

Prices.

Barb Wire.—The New York market is rather sluggish, and comparatively little is doing. Prices remain without change, at 3.25 cents to 3.35 cents for Galvanized Four Point, New York. Painted Wire is quoted ½ cent less.

Chicago, by Telegraph.—Manufacturers report a brisk trade. They are still having a heavy demand from the South, but their orders are picking up considerably in the Northwest. They quote carload prices 2.60 cents for Painted, and 3.25 cents for Galvanized. Jobbers quote small lots 2.75 cents for Painted and 3.30 cents for Galvanized.

Wire Nails.—Quotations are still on a basis of $2.10 to $2.15 at mill for carload lots, but many of the manufacturers having a good many orders on their books are disposed to withdraw extreme quotations. Others, however, continue to seek business at these figures. It is understood that some large orders have been placed by heavy buyers, and the smaller trade have also been purchasing in lots suited to their requirements. It will thus be seen that the situation has not materially changed.

Chicago, by Telegraph. — Continued heavy business is reported in Wire Nails. Carload buyers are increasing among the smaller merchants. An attempt is being made by manufacturers to advance prices, and some of them now refuse to sell at current rates. Factory lots are still quoted $2.20 to $2.25; Chicago and small lots $2.30 to $2.35 from stock.

Cut Nails.—There has been no important change in the situation since our last review, but there are indications that the slight improvement then noted still holds, as makers evince little anxiety to sell and are disposed in some cases to recede from the extreme quotations which have prevailed. There has also been some business done. Quotations are still on a basis of $1.80, f.o.b. New York, for carload lots of Iron or Steel Nails, a figure which is, however, shaded in exceptional cases. Small parcels from store are regularly

quoted at $1.85 to $1.90 for Iron, with about 10 cents advance for Steel.

Chicago, by Telegraph.—Orders are somewhat better for Cut Steel Nails, and a start seems to have been made toward activity in that line. Factory lots are quoted at $1.75 @ $1.85, Chicago, according to brand. Small lots from stock sell at $1.85.

Screws.—Under date January 1 the manufacturers of Screws announce a revised list on Iron and Brass Wood Screws, as given on another page.* In this list inequalities in the former list are corrected, and at the same time a moderate advance has been made in the prices of the goods, The discounts applying to the new lists are as follows, as given in the comprehensive discount sheet of American Screw Company, Providence, R. I., the discounts of the other associated manufacturers being the same:

	Discount, Per cent.
Wood Screws :	
Iron, Bright, Flat Head	72½
" " Round Head	67½
" Blued, Flat Head (add 5 per cent. to net amount of invoice)	72½
" Blued, Round Head	67½
" Felloe, Flat Head	67½
" Pinched Head	67½
" Japanned, Flat Head	67½
" " Round Head	62½
" Tinned, Flat Head	67½
" " Round Head	62½
" Lacquered, Flat Head	65
" " Round Head	60
" Bronzed, Flat Head	65
" " Round Head	60
" Brass Capped, Burnished	40
" Silver Capped, "	40
" Nickel Plated, Flat Head, Burnished	75
" " " Round Head, "	72½
" Silver Plated, Flat Head, "	50
" " " Round Head, "	50
" Brass Plated, Flat Head	55
" " " Round Head	55
" Copper Plated, Flat Head	55
" " " Round Head	55
" Continental, Flat Head	*
Brass, Flat Head	72½
" Round Head	65
" Lacquered, Flat Head	65
" " Round Head	60
" Bronzed, Flat Head	65
" " Round Head	60
" Silver Plat'd, Flat He'd, Burnished	50
" " Round Head, "	50
" Nickel Plated, Flat Head, "	66⅔&c6
" " R'nd Head, "	66⅔
Copper, Flat Head	65
" Round Head	60
Bronze, Flat Head	72½
" Round Head	65
Phosphor Bronze, Flat Head	60
" Round Head	55

The American Screw Company quote their Rogers' Drive Screws at discount 83⅓ per cent. from the Iron Wood Screw list, and Russell & Erwin Mfg. Company quote their Diamond-Point Steel Screws at the following discounts from the same list ·

Oval Head	discount. 85 %
Flat Head	" 83⅓ %
Round Head	" 80 %

Machine Bolts.—While there has been no open change in quotations, some of the manufacturers are holding the goods a little more firmly, and extreme concessions are being in some cases withdrawn. This is regarded as an indication that the market is in a somewhat improved condition.

Common Carriage Bolts.—The manufacturers in this line have recently confirmed prevailing prices. The organization has been somewhat strengthened by the coming in of at least one outside concern, which should have the effect of making prices firmer and more regular.

Cabinet Locks.—Although quotations are being made by some of the Western jobbers at better prices than those contemplated by the Cabinet Lock Association, the members of the association refer to the market as steady, and at a recent meeting decided that there was no occasion for a change in prices.

Lead Pipe, &c.—Under date January 1 the following revised prices for Lead Pipe, Sheet Lead, &c., are announced:

Lead Pipe, ₩ lb	7¼¢
Block Tin Pipe, ₩ lb	40 ¢
Sheet Lead, ₩ lb	8 ¢
Tin Lined Pipe, ₩ lb	15 ¢

Coffee Mills.—The following are revised list prices of Coffee Mills manufactured by the Jno. M. Waddel Mfg. Company, Greenfield, Ohio. It will be observed that several new sizes of Mills have been added to this list. The prices given are subject to a discount of 40 per cent.:

	Per dozen.
No. 40, Box Mill	$10.50
No. 44, "	10.00
No. 45, "	13.00
No. 1010, "	8.00
No. 1020, "	10.00
No. 1030, "	7.00
No. 1050, "	6.50
No. 1060, "	7.50
No. 1070, "	5.00
Lone Star Side Mill	5.00

Glass.—The American Window Glass Company completed their organization and were put upon a working basis at the adjourned general meeting held at Chicago on the 30th ult. President J. A. Chambers, of Chambers & McKee, Pittsburgh, presided over the meeting, which was attended by about 60 Glass manufacturers. The gathering represented 1000 pots out of the 1200 pots constituting the plants of all the Western Glass makers. The company decided to increase their capital stock from $400,000 to $600,000. It is stated that the company have dignified themselves under the term "pool," thus disposing of the unpopular term "trust." The headquarters of the new concern will probably be located at Pittsburgh, with offices at Chicago and San Francisco. The company have provided that buyers of 20,000 boxes of Glass and over will be enabled to purchase at the minimum prices on the usual 60 days at a discount of 80 and 10 per cent. Purchasers of less than 20,000 down to the limit of 5000 boxes, below which the company do not care to sell. will pay proportionately higher prices for Window Glass. Under the workings of the new company all the products of their various factories will be at the disposal of the head office, and the Glass will be sold by the travelers employed by the trust, other dealings being prohibited by heavy penalty, but shipments will be made direct from the various places of manufacture to buyers. It is reported that a few firms in the West refused to join the company, but their refusal is expected to be withdrawn; also that Eastern factories to some extent refuse to unite with the company, but it is thought that as soon as the sincerity and success of the new company are demonstrated very few firms will remain outside. What the result of this organization will be, or what effect it will have upon the Glass market, it is difficult to determine at this time. That no increase in prices has yet been made is an agreeable surprise to many connected with the Glass trade.

Guns.—Merwin, Hulbert & Co., 26 West Twenty-third street, New York, have advanced January 1 the price of their Hopkins & Allen Single Barrel Breech Loading Guns, 20, 16 and 12 gauge, to $7.50. These Guns are described as provided with rebounding locks and automatic shell ejectors, being easily taken apart by withdrawing a thumb screw, which being taken takes up the wear the Gun is subject to, and makes it a most solid single barrel breech loader with detachable barrel.

Blasting Cartridges.—The following are the list prices of Peters' Blasting Cartridges, manufactured by Peters Cartridge Company, Cincinnati, Ohio, a description of which was recently given in these columns. The list is subject to a discount of 10 and 10 per cent.:

Length of Cartridge in inches	No. Cartridges in each case.	Price per case.
4	144	$7.75
6	96	
8	72	8.00
10	60	
12	48	
16	36	6.50
20	30	
24	24	
30	20	6.25
36	16	

With Fuse Attached.

Length of Cartridge in inches.	No. Cartridges in each case.	Price per case.	
		Single T.	Double T
8	72	$10.00	$10.50
10	60	9.50	10.00
12	48	8.50	9.00
16	36	8.25	8.75
20	30	7.75	8.00
24	24	7.25	7.50
30	20	6.50	6.75
36	16	6.25	6.50

Miscellaneous.—Witte Hardware Company, St. Louis, Mo., are selling the Rosenthal Cutlery Cases, designed by C. T. Rosenthal, Batesville, Ark., at the following prices:

No. 2246, 30 compartments, each	$4.50
No. 2446, 40 compartments, each	5.50

An illustrated description of this convenient and attractive Case for the display of Pocket Cutlery was given in these columns some time ago.

Hog Rings.—The following are the prices of Electric Hog Rings and Ringers manufactured by W. A. Comstock & Co., 34 Wabash avenue, Chicago:

Electric Hog Rings, per dozen boxes	$1.50
Electric Hog Ringers, per dozen	2.00

Washita Stone.—The Pike Mfg. Company, Pike Station, N. H., advise us that owing to the scarcity of good Arkansas and Washita Rock they are compelled to withdraw all quotations for these Stones. They will issue new prices soon after January 1.

* A copy of the Screw Lists, page 76, printed on heavy paper, suitable for store or office use, will be mailed to any of our subscribers on request. Quantities can be obtained by jobbers with their name, address, &c., on reasonable terms. Address *The Iron Age*, 96-102 Reade street, New York.

Sure Grip Ice Tongs.—The following are announced by J. Brinkerhoff & Son, Auburn, N. Y., as their net prices on the Sure Grip Ice Tongs, a description of which is given among our novelties in this issue. Terms—30 days, 2 per cent. discount for cash in 10 days, f.o.b. cars :

Tinned, opening 15 inches, per dozen.....$3.00
Plain, opening 15 inches, per dozen..... 2.40

Portable Storm Houses.—The Iron Cottage Company, Grand Rapids, Mich., have been increasing the assortment of their Portable Storm Houses, which are now referred to as offered in such variety that any size door can readily be fitted. Their list is as follows, subject to a discount of 40 per cent. :

No.	Weight.	Hight.	Width.	Depth.	No. of Doors.	Price.
401	180	7 to 8 ft.	39 to 46 in.	32	1	$13.50
403	220	7 to 8 ft.	54 to 62 in.	32	1	16.50
404	250	7 to 8 ft.	70 to 78 in.	32	1	18.50
405	280	8 to 9 ft.	86 to 94 in.	32	1	22.00
406	320	8 to 9 ft.	100 to 108 in.	36	2	26.00
407	360	8 to 9 ft.	116 to 124 in.	48	2	32.00
402*	200	7 to 8 ft.	39	39	1	15.00

* Has door at side.

Trade Items.

HIBBARD, SPENCER, BARTLETT & CO. of Chicago have disposed of their stock of Glassware and will no longer carry that line. They state that their entrance into the Glassware trade was caused by their desire to secure an adjoining building which was under lease to a Glassware house, whose stock they bought. The additional room has been long needed by other departments of their regular business. Their Lamp trade has especially grown, and now requires much more space than has hitherto been given it.

THE NEW HAVEN COPPER COMPANY, 249 Pearl street, New York, send a convenient leather pocket card case, on the outside covers of which are fastened sheets of celluloid, with engraving of a child's head on one side and their business card on the other.

THE STANDARD FIBER WARE COMPANY of Mankato, Minn., issue a wall calendar of pleasing design. A large card bears the company's address and the portraits of two sweet faced girls. On the lower part of the card are attached leaflets for each month. The background of the card is tinted in drab, while the portraits are in brown.

THE ANSONIA BRASS AND COPPER COMPANY, 19–21 Cliff street, New York, issue an elegant souvenir bound in celluloid. It contains engravings of their Brass rolling mills, Copper rolling mills, Lamp, Chandelier and Wire insulating factories, Wire mills and the factories of the Ansonia Clock Company, Brooklyn, N. Y. The illustrations indicate the extent and completeness of the company's plant.

THE HARDWARE FIRM of Johnson Bros., Cincinnati, Ohio, have been succeeded by the newly incorporated firm of the Johnson Bros. Hardware Company, who have organized under the State laws of Ohio with a paid up capital of $100,000. The new company will extend their business very largely, having for this purpose leased the premises adjoining their present location, Nos. 271, 273 and 275 West Fifth street. This will enable them to carry a much larger and more varied stock of General Hardware, Cutlery, Tools, &c., and with the increased facilities they hope to largely extend the business of their predecessors. The officers of the new company are as follows: Geo. B. Johnson, president; W. C. Johnson, vice-president; Harry C. Bates, secretary; John A. Sommermeir, treasurer. The Board of Directors consists of Geo. B. Johnson, W. C. Johnson, Samuel W. Ramp, James M. Robinson, Harry C. Bates, John A. Sommermeir and Eugene L Johnson. The new firm desire to express their thanks to the patrons of the old company, and trust to merit their continued patronage, as well as that of the trade generally.

THE AMERICAN NAIL COMPANY, Covington, Ky., issue a tasteful card, giving notice of the removal of their plant to Anderson, Ind., to which address they request that all communications and remittances be sent after January 15, 1891. The company were established at Covington in 1875. They refer to the change as made because the removal will inaugurate a new era in their history in the way of increased facilities for manufacturing.

R. CLANCY, Syracuse, N. Y., issues a calendar for 1891. It is made use of to advertise Theatrical Stage Hardware and Calcium Light Apparatus, which he manufactures. He also imports Scenery Canvas and Screens and Oxygen and Hydrogen Gases compressed in cylinders for the road.

THE COLUMBUS CART CO., Columbus, Ohio, notify the trade that owing to the recent and heavy advance in the price of wheels and other material they are compelled to withdraw all quotations made by them on Carts, Road Wagons, Buggies, &c. The above firm are about issuing a new catalogue.

IT IS ANNOUNCED under date January 1, 1891, that the firm of Rundle, Spence & Co., Milwaukee, Wis., have reorganized into a stock company, which will be known as the Rundle & Spence Mfg. Company. The following are the officers of the new concern: J. P. Rundle, president; T. Spence, vice-president; E. C. Smith, secretary; A. Fowle, Jr., treasurer, and W. M. Webster, general manager. The old firm commenced the jobbing business on a small scale in 1881, but during that year their business increased so much as to make it necessary to open a factory in the adjoining building. Two years after their facilities were still further increased by the erection and occupation of their present site, 63 to 67 Second street. Soon afterward the firm purchased a tract of land on the South Side, and on it erected their Iron foundry. During the past year they opened a special department where they manufacture Lavatories, Closets, Urinals, Wash Trays, &c., with all trimmings pertaining thereto. They have also opened a Chicago house at 193 Lake street, where they will keep a complete list of Plumbers' and Steam and Gas Fitters' supplies. Mr. Webster, the general manager of the company, will make his headquarters at the Chicago branch.

WE ARE ADVISED by Henry Seymour Cutlery Company of Holyoke, Mass., that their 1890 price-list remains in force during the present year. In this connection our readers may be interested in the testimonial to the merit of their goods which is published in their advertisement on another page of this issue.

UNDER DATE January 1, 1891, Lovell Mfg. Company, Erie, Pa., announce that S. C. Gault has associated himself with the company and will hereafter represent their lines of goods. Mr. Gault is referred to as long and favorably known to the jobbing buyers of the United States, and it is hoped that they will extend to him the same courtesies shown in the past.

CHARLES X. CORDIER, formerly with Wallace & Sons and Manhattan Brass Company, and during the past year manager of Park Brother & Co.'s New York house, has again returned to the Brass business and is now the manager of the New York store of the Bridgeport Brass Company, Bridgeport, Conn., at No. 19 Murray street, where he will be pleased to see all his old friends and customers.

UNDER DATE JANUARY 1 announcement is made that Alexander Clark, formerly of Clark, Widdifield & Co., jobbers of Hardware, and C. R. Talbott, formerly of Talbott and Lupton, Iron and Steel factors, have formed a co-partnership under the firm name of Talbott and Clark Company, with office at No. 8 Wiggins Block, and warehouse at 51 West Pearl street, Cincinnati, Ohio. The company intend to handle Iron and Steel products, and will operate a warehouse for the accommodation of the trade by carrying stocks of the product of the different mills represented by them, and are thus in a position to supply the trade on short notice when necessary.

THE HUMPHREYSVILLE MFG. COMPANY, Seymour, Conn., state that all agencies were withdrawn January 1 of the present year. All orders must hereafter be sent to the factory at Seymour. George H. Bartlett will act as their Western salesman, George F. Drake continuing as salesman in the East.

MOORE & SHAW, Philadelphia, have recently opened a store at 1737 Frankford avenue, and will do a wholesale and retail business in Hardware, House Furnishing Goods, Mill Supplies, Cutlery, Paints, Oils, Glass, &c.

BOUTON & LAWRENCE, dealers in Hardware, Building Material, Paints, Oils, &c., Van Wert, Ohio, have disposed of their business to Jones & Tudor, who will take possession January 15, 1891.

IN A CIRCULAR dated December 29, 1890, it is announced that from January 1, 1891, the firm name, good will of the business and manufacturing plant of Walter Coleman & Sons, Providence, R. I., is leased to Edward J. F. Coleman, and the business heretofore carried on by Stephen R. Coleman, under the style of Walter Coleman & Sons, will be hereafter conducted under the name of Walter Coleman & Sons, Edward J. F. Coleman, proprietor. The business will be continued at the stand occupied by the firm for the past seventy years. Mr. Coleman, the new proprietor, has had long experience as superintendent for the old firm, and is referred to as thoroughly familiar with the Block business. He states that it is his intention to maintain, and if possible to raise, the high standard of the Coleman goods.

BROOKLYN MALLET AND HANDLE WORKS announce that they have now permanently located their office and storeroom at 18 Warren street, New York, from which address they are now prepared to fill promptly any orders with which they may be favored.

THE AUBURN MFG. COMPANY, Auburn, N. Y., call attention to the following errors in their catalogue of October, 1890: Page 6, No. 41, "6 tine" should be changed to "5 tine" under heading 5 tine Manure Forks, and page 26, No. 255, "9 teeth" Gravel Rake should be changed to "8 teeth."

IT IS ANNOUNCED under date January 1 by E. E. Prusia & Co., Fort Dodge, Iowa, that they have sold their entire stock of Hardware and merchandise to the Prusia Hardware Company, who will continue the business at the old stand. The new firm will handle a full line of General and Builders' Hardware, Tinware, Stoves, Cutlery and Blacksmiths' Supplies. The retail department will be under the supervision of the vice-president, J. J. Brown,

and the wholesale department will be governed by the president, E. E. Prusia and the manager, J. J. Rutka.

UNDER DATE January 1 it is announced by H. Loewenstein, wholesale dealer in Hardware, Iron and Nails and manufacturer of Saddles and Harness, Charlestown, W. Va., that he has taken into partnership with him his two sons, Louis and Mose Loewenstein, who have been for years connected with the business. The style of the new firm will be Loewenstein & Sons.

THE GOODELL COMPANY, Antrim, N. H., in their advertisement on another page, illustrate their Champion Carriage Wrench, a description of which is given and its advantages enumerated.

NEGOTIATIONS are still being conducted with a view to consolidating the interests of the leading Wringer manufacturers. This project is an outgrowth of the negotiations for the sale of the works to a syndicate of English capitalists which was abandoned after several attempts to reach a satisfactory understanding. It is now reported that four companies are considering the feasibility of consolidating their interests in one corporation with a capital stock of something like $2,500,000. While the movement has not progressed to its completion we are advised that it is likely that the plan will be carried into effect.

UNDER DATE January 2 it is announced that the entire business of McIntosh, Huntington & Co., Cleveland, Ohio, has been purchased by the McIntosh, Huntington Company, who will continue the business heretofore conducted by the former concern, assuming all their liabilities and collecting all amounts that may be due them. The company, as now constituted, comprises the members of the old firm of McIntosh, Huntington & Co. and a number of their valued employees. The officers and heads of departments are as follows: George T. McIntosh, president; A. C. Hord, vice-president; H. H. Bishop, secretary; F. P. Smith, treasurer; W. H. Coles, manager mercantile sales; Jay Smith, Jr., manager manufacturers' sales, and R. C. Enwright, manager collection department. The management of the business thus remains substantially as heretofore.

F. G. REINECK, Sioux Falls, S. D., has sold his entire stock of Hardware and good will to Geo. E. Hill of Columbia, S. D. Mr. Reineck for the present will not engage in any business.

THE FIRM OF Sickels, Preston & Nutting, Davenport, Iowa, was December 1, 1890, incorporated as a stock company, under the name of Sickels, Preston & Nutting Company, with the following officers: Robert Sickels, president; J. R. Preston, vice-president; J. R. Nutting, treasurer and general manager; Grant H. Nutting, secretary. The Board of Directors consist of J. R. Nutting, A. J. Preston and Grant H. Nutting. The stock carried includes shelf Hardware, Cutlery, Japanned, stamped and pieced Tinware, Tin Plate, Sheet Iron, &c. The business is principally wholesale, having however a retail department. The firm was established 40 years ago by Robert Sickels, who soon after associated with him as partner A. J. Preston, under the firm name of Sickels & Preston, which was afterward changed to Sickels, Preston & Nutting.

IT HAS BEEN DECIDED by the Board of General Appraisers, at New York, that Gun Springs, Locks, Hammers and Taps, Chisels, Gouges, Planes, Wood Carving Tools, &c., are correctly classified as manufactures of steel and subject to duty at 45 per cent. ad valorem. It was claimed that they should be admitted as forgings of iron and steel, subject to duty at 2½ cents per pound, or as Cutlery at a duty of 35 per cent. It has, however, been decided that they had been advanced beyond the condition of forgings, being tempered, polished, completed implements, and that they are now commercially known as forgings or as Cutlery.

E. DILWORTH & Co., Vermont, Ill., will open about January 20 a new stock of Hardware, Stoves, Tinware, Agricultural Tools, Implements, &c. Mr. Dilworth is a member of the old firm of E. & E. Dilworth, who carried on business for more than 20 years. The junior members of the new firm are T. M. Cox and Willis Dilworth.

IN A CIRCULAR relating to their line of goods, a house which makes a point of selling to only one concern in a place, makes the following suggestion:

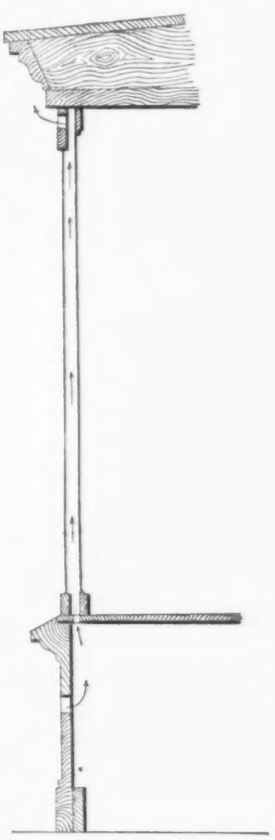
Never buy or handle the same brand of goods as your nearest competitor. The reason why, it will surely end in one or the other, or both trying to undersell, thereby ending in loss to both.

ON THE EVENING of December 30, 1890, Sickels, Sweet & Lyon, 35 Barclay street and 40 Park Place, New York, tendered a holiday supper to their employees, at Rogers' dining rooms on Park Place. The *menu* was an especially good one. After the supper a few impromptu remarks were made by nearly all of the 32 persons present and letters of regret were read from salesmen whose attendance was prevented. The affair was a thoroughly enjoyable one and terminated amid seasonable greetings and expressions of good will and the hope that all might meet again in a similar way in 1891.

Frosty Show Windows.

THE INQUIRY which we published December 25 in regard to frost collecting on show windows has called forth responses from some of our readers, who have found a remedy for this annoyance. The principle made use of in each case is the same—that of keeping the air on the inside and outside of the plate glass as nearly the same temperature as possible. This is accomplished by ventilation. The Stambaugh-Thompson Company, Youngstown, Ohio, describe the following plan, which has proved effective in their case: The accompanying illustration shows a sectional view of their show window, which we give to insure a thorough understanding of the arrangement, the arrows indicating the direction in which the circulating air moves. The plates of their show windows are first incased inside with glazed sash, well-fitted. Inch and a quarter holes are bored through the outside panel under the floor of the show window, about 6 inches apart. Half inch holes, 2 inches apart, are then bored through the floor of the show window as close to the outside plates as possible. At the top of the window, either through the sash or ceiling, the same number of holes of the same size are made as in the base. This arrangement is said to secure entire freedom from the frost collecting on the glass.

E. M. Richardson, Waltham, Mass., has windows made in sections, matched together and placed on the outside of the plate glass, with the desired results. He has two windows 7 feet wide, 9 feet high; three windows 2½ feet wide, the same hight, with large transom sash over each. He experiences no inconvenience from the two thickness of glass, not even finding it necessary to remove the extra sash during the summer. Guilford Dudley, Poughkeepsie, N. Y., has sliding sash lightly fitted at the back of his show windows, leaving the space for show goods between the sliding sash at the rear and the plate glass in front. Half a dozen ¾-inch holes are bored in the outside sash at the bottom, and as many more at the top of the same sash. As a result of this arrangement he states that for ten years he has had clean windows, while those of his neighbors are obscured by frost in cold weather. Lamps or gas can-



Showing Plan of Ventilating Show Windows to Prevent Frost on Glass.

not be used in his window without the glass frosting, but electric light can be used without any ill effects. At Monroe, Mich., a number of stores have the show windows arranged with a ventilator at the bottom admitting the cold air from the outside, and a conductor pipe at the top of the window leading into a chimney, which causes a circulation of air, resulting in about the same temperature on the outside and inside of the plate glass, which keeps it free from frost. The four places which we have described show four ways of securing the desired result. They may be of service to those who have not yet satisfactory arrangements of avoiding frosty windows.

The Acme Liquid Fuel Company are carrying on a series of tests in reheating in a furnace built for experimental purposes by G. D. Muirhead, at Saratoga.

IRON WOOD SCREWS.

List January 1, 1891.

No.	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	20	22	24	26	28	30
Inches.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.
¼	40	40	40	40	40																				
⅜	40	40	40	40	40	40	41	48	55	62												10 Gross	in a package.		
½	....	40	40	40	40	41	45	52	59	66	73	80	87												
⅝	....	40	40	40	40	43	49	56	63	70	77	84	91	98	110										
¾	....	....	40	41	41	46	53	60	67	74	81	88	95	105	120	135	155								
⅞	....	....	41	44	48	52	59	66	73	80	87	94	100	115	130	150	170								
1	....	....	....	51	55	59	66	73	80	87	94	100	110	125	140	160	180	200	220	270					
1¼	....	....	....	....	62	68	74	80	87	94	100	110	120	135	155	175	195	215	235	285	335	395	5 gross	in package.	
1½	....	....	....	....	70	76	82	88	94	100	110	120	130	150	170	190	210	230	258	300	350	415			
1¾	....	....	....	....	....	....	92	98	105	110	120	130	145	165	185	205	225	245	270	320	375	435			
2	....	....	....	....	....	....	105	110	120	125	130	140	155	180	200	220	240	260	290	340	400	455	1 gross	in p'k'ge.	
2¼	....	....	....	....	....	....	....	....	130	135	145	150	170	190	210	235	260	280	305	368	420	480			
2½	....	....	....	....	....	....	....	....	155	160	170	175	185	205	225	255	275	300	330	385	450	510			
2¾	....	....	....	....	....	....	....	....	....	....	205	210	215	225	245	270	295	325	360	425	500	560			
3	....	....	....	....	....	....	....	....	....	....	235	240	245	255	265	295	330	365	405	480	555	640	750	½ gross in	a package.
3½	....	....	....	....	....	....	....	....	....	....	330	340	350	360	370	380	390	430	475	555	635	730	850		
4	....	....	....	....	....	....	....	....	....	....	....	....	450	....	460	....	475	....	560	640	730	840	970		
4½	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	640	....	660	740	845	970	1105		
5	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	820	860	975	1105	1260	1425	
6	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1175	1250	1350	1600	1805	2010

The following varieties of Iron Screws are invoiced from above list at varying discounts: Flat, Round, Piano, Fillister and Oval Head Screws, Dowel and Felloe Screws, Bright, Blued, Bronzed, Japanned, Lacquered and Tinned.

BRASS AND BRONZE METAL WOOD SCREWS.

List January 1, 1891.

Number.	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	20	22	24	26
Inches.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.
¼	80	80	84	87	91																		
⅜	80	82	86	89	95	103	110	120															
½	....	86	89	93	103	110	120	130	150	170	190												
⅝	....	....	91	99	106	120	130	150	170	190	215	240	265										
¾	....	....	106	110	115	130	145	160	190	215	240	265	300	335	370	410	450						
⅞	....	....	135	140	145	150	155	180	205	235	265	295	335	370	410	455	505						
1	....	....	....	155	160	165	170	195	230	260	295	330	365	410	455	500	555	665					
1¼	....	....	....	205	210	215	220	225	265	300	325	385	435	485	535	595	655	720	785	935			
1½	....	....	....	....	285	290	295	300	305	345	395	445	500	560	625	690	760	835	915	1085			
1¾	....	....	....	....	....	....	375	380	385	390	445	505	570	635	710	790	865	950	1045	1240	1450	1685	
2	....	....	....	....	....	....	480	485	490	495	500	565	640	715	795	880	975	1070	1170	1390	1630	1890	
2¼	....	....	....	....	....	....	....	....	685	690	695	700	705	790	880	980	1075	1190	1300	1540	1805		
2½	....	....	....	....	....	....	....	....	....	....	950	955	960	965	970	1075	1185	1300	1430	1695	1985	2300	
3	....	....	....	....	....	....	....	....	....	....	1370	1375	1380	1385	1390	1395	1400	....	1680	1995	2340	2710	3115

The following varieties of Screws are invoiced from above list at varying discounts: Flat, Round, Fillister and Oval Head Screws, of Brass, Copper, Bronze or Phosphor Bronze, Bronzed or Lacquered.

Australian Trade.

We are in receipt of the following letter from Polhemus Lyon of the firm of Tower & Lyon, 95 Chambers street, New York. Relating as it does to the important matter of Australian trade and calling attention to what should be done to increase it, we take especial pleasure in laying it before our readers. Mr. Lyon's many friends will also anticipate with pleasure his early return and congratulate him upon the successful completion of his extended tour. His letter is as follows:

S.S. MARIPOSA, NORTH PACIFIC, December 16, 1890.

To the Editor of the Iron Age: In four days we hope to reach the wharf at San Francisco, completing a 20 days' sail from Auckland and 25 from Sydney.

My term of expatriation having ended I shall eagerly set foot on American soil, more loyal and more deeply attached to my native land than ever, but knowing perhaps more of my country's weaknesses,

I wish it were enacted that no one should be eligible to a seat in Congress until he had spent not less than three months in foreign lands—for it goes without saying that many of our legislators are exceedingly narrow and provincial, having no conception of the interests our country has beyond its own shores—not deeming it of any moment to maintain a dignity abroad commensurate with our rank among the nations of the world.

I believe the United States own two buildings in foreign lands devoted to our diplomatic service—one in Siam, the other in Corea—and everywhere else hire offices, which are often a suite of second story rooms, cramped and petty.

As a rule, I think our diplomatic and consular service, so far as our representatives are concerned, rank favorably with any nation, and I have heard English travellers give our consuls a very high name as compared with their own representatives, who are not generally popular.

A very serious matter of discredit I think to our country is the mail service between the United States and Australia and New Zealand. Here the foreign governments pay a subsidy of over $150,000, while Uncle Sam refuses to contribute, getting the benefit, however, and showing a net profit of over $19,000. Is is dignified or just for a great and wealthy government such as ours is to reap a pecuniary profit from a mail service with the colonies?

It was my privilege to meet at a dinner the Postmaster-General of one of these colonies. He told me that they had offered to the United States to reduce the postage between our country and the colonies to the Postal Union rates of five cents, but that our Government had failed to accede to this proposition.

I know my subject is rather hackneyed, but it is of vital importance to all interested in prospective or present export business. Were our communication with Australia semi-monthly instead of monthly much more business would be saved to the American manufacturer. More than once I lost business because it was three weeks to mail day, while the mail leaves Australia seven times a month for Europe.

My visit to the colonies proves very clearly to my mind that the English and German manufacturers are awaking to very live efforts after the business that American houses have enjoyed without any serious competition from Europe.

Not only has every English manufacturer a representative in the colonies, but I have found Hardware and Tools *fac-simile* in pattern, label and package to our celebrated makes. This is in some sections making serious inroads into our business, for at the same price England has advantage not only in mail and steam freight facilities, but in the matter of financing accounts.

I do not think it is true at every point, but I have been told several times by wholesale Hardware buyers that the proportion of their American orders to their entire purchases had been falling off for several years.

I do not believe this is necessary, for I still think if American manufacturers will cultivate this trade it will yield ample returns, only the crop is slow, and needs constant watching and tilling.

I think it will generally prove mutually advantageous to have sales go through our great commission houses, who are well equipped for this business and do it very economically to the buyer, but I question if it is wise to leave the matter entirely to them, it being in my judgment desirable to supplement (not supplant) this with direct correspondence, thus being more sure of obtaining interested attention of the buyer than when he receives a case of sundry catalogues, sometimes, often he claims, without discount sheet. But our commission houses are generally very popular in the colonies, and so far as I could learn their mode of doing business does not admit of criticism from either buyer or seller.

Delays in Delivery.

THE SUBJECT of delays in delivering goods, which was referred to in *The Iron Age* December 25, as discussed in the London *Ironmonger*, is receiving additional attention in that journal. A correspondent in a later issue of the *Ironmonger* thinks that advantage should be taken of the suggestions made in a former issue to let the manufacturers see how they stand in the eyes of their customers. As an example of the delays to which he has been subjected he says:

In March last, when fitting up a greenhouse, we ran short of Vine Eyes. An order was sent to a factor for a few gross to be dispatched on receipt per passenger train. They arrived per passenger train in September.

Six months is certainly too long a time for any manufacturer to take in filling an order for a few gross of Vine Eyes.

Again, in August we booked an order for an Electro Plated Tea Service, required in three weeks for a special occasion, taking place on a Thursday. We wrote manufacturers to that effect. They replied, saying it would be sent per passenger train on the Tuesday previous. On Wednesday morning we received invoice, and expected delivery of Tea Service every hour. As it did not come to hand, we wired senders; they replied, saying it left on Tuesday night. Again we wired, asking on which railway was it coming. That question they did not answer, but replied as before, saying it left on Tuesday night. On Friday it came to hand, and we had not only lost our profit, but a good customer through such disadpointment.

Cases of this are doubtless duplicated many times in this country. There sometimes seems to be a disposition on the part of the manufacturer or jobber to ignore the rights of the merchant, and take advantage of the fact that the customer is entirely at their mercy while they have his order; nor do they scruple to strain a point in regard to the time the shipment was made. Canceling an order brings little relief, as upon the receipt of such a request matters are often hurried and a shipment of the goods made, a courteous letter sent, trusting the goods have arrived ere this, &c. Little satisfaction usually results from trying to fasten the blame where it belongs, as is shown in the concluding portion of the correspondent's letter:

We determined to find out who were to blame, so we sent a claim to the railway company for delay. They at once proved to us that the goods were not sent as stated above, giving us the hour when the parcel was handed in at the Sheffield office. We then wrote senders to confirm this. They replied, saying that owing to certain complications between the packing room and entering office they failed to trace the matter.

Some loophole is found by wholesalers to work out of, or an unsatisfactory explanation given, which is intended to stop further inquiry. The merchant may resolve that, as a mode of retaliation, he will place no more orders with the offending party, but this does not compensate for the vexation experienced, nor the loss of a customer. The writer further states:

While discussing the question of delayed delivery the other day with a traveler of 30 years' standing, he frankly admitted that attention from his firm can only be obtained by continual correspondence. But even this objectionable remedy in many cases has not the desired effect, judging from from the repeated replies, such as "We are hurrying maker," and "It is having attention." We are, therefore, led to believe that thousands of such replies are written daily, without knowing whether goods are even put in hand.

Such an admission from the representative of a firm and the conclusions drawn are not calculated to inspire confidence, or even a hope that there may be relief from these annoyances.

This is a matter which is deserving of attention from both jobbers and manufacturers, most of whom, especially those who have a large business, make it a point to ship goods promptly, and in this fact find the secret of not a little of their popularity. There is generally the intention to avoid unnecessary delay, but the trouble is often in the management of the business in the failure to have the goods in reach, or in omitting to give the customer prompt and explicit advice when for any reason shipment cannot be promptly made.

Novel Arrangement of Store Fronts.

A CORRESPONDENT writing from Ithaca, N. Y., describes an arrangement of the front of store buildings which he thinks should meet with a great deal of favor by reason of the advantages shown to result from it. Instead of placing the door or doors in the center of the store front and having an ordinary show window on each side, the door is placed a little to the side of the center, thus allowing space for a larger and more conspicuous show window than would result if the store door was exactly in the middle. This large window occupies probably one-half of the entire front, while the door and a smaller window

suitable for a special display of a particular line of goods take up the remaining part. Our correspondent states that he does not know that this plan is a novel one, or whether it may not be employed in other places to a greater or less extent. He calls attention to it, however, for the reason that it is not at all a common arrangement in the city where he lives, and during a long and extensive acquaintance with the trade he has failed to observe an arrangement exactly like the one of which he writes. We are under the impression that among the long list of retail stores the arrangement of which has been illustrated in previous issues of *The Iron Age* there have been cases closely approximating the one referred to by our correspondent. We should, however, be glad to hear from our readers touching this feature of store fronts and show window arrangement, and if specially interesting instances have come under their personal observation we should be pleased to receive sketches or descriptions of them.

Price Lists, Circulars, &c.

SIMMONS HARDWARE COMPANY, St. Louis, 1891 Annual Catalogue: Children's Carriages, Boys' Wagons. Velocipedes, Bicycles, Churns, Tricycles, Wheelbarrows, Gasoline Stoves and Trimmings, Ice Cream Freezers and Siberia Refrigerators.

A. TREDWAY & SONS HARDWARE COMPANY, Dubuque, Iowa: Dairy Supplies, Solder, Tin Plates, Shelf and Builders' Hardware, Bar and Sheet Iron, Wood Stock, Ammunition, &c. Attention is directed to Syracuse Twist Drill Bits and Buffalo Scales.

HENRY B. NEWHALL COMPANY, 105 Chambers street, New York: Charcoal Iron and Steel Wire, Annealed Stone or Weaving Wire, Cast Steel Wire, Machinery Wire, Tinned Wire, Tinned Stone Wire, Tinned Mattress Wire, Tinned Brown Wire, Stretching and Cutting Wire. A table is given of sizes and lengths of Iron and Steel Wire, also a list of Special Wires.

THE NEW JERSEY WIRE CLOTH COMPANY, Trenton, N. J.: Galvanized Wire Netting, Galvanized Wire Cloth, Galvanized Farm Fencing, Painted Window Screen Cloth, Steel, Brass and Copper Cloth, Roebling Standard Wire Lathing, &c.

E. T. BARNUM, Detroit, Mich.: Wire Flower Pot Stands, Plated Wire Spark Guards, Wire Nursery Fenders, &c. A large illustrated poster showing these goods intended to be put in a conspicuous place.

STERLING EMERY WHEEL COMPANY, Tiffin, Ohio: Pure Turkish Emery and Huntington's Emery Wheel Dresser. The latter is designed for truing, shaping, sharpening and removing glaze from solid emery wheels running at full speed.

SOUTH BEND SEEDER COMPANY, South Bend, Ill.: Hand Broad-Cast Seeders. These goods are referred to as finely finished, easy and perfect workers, and are warranted to sow to guage. These are made either with crank wheel or fiddle pattern.

BAUM'S CASTORINE COMPANY, Syracuse, N. Y.: Baum's Castorine, for axle lubricating, put up in tin packages of pints, quarts and gallons. It is stated by the manufacturers that it is the same in summer or winter, that it has exceptional wearing and lubricating qualities, that it wears to the last drop without leaving any gum, and that it will not run down the spokes or out of the hubs. Beck & Corbett Iron Company, St. Louis, Mo., are agents for the Castorine.

JOHN DEERE PLOW COMPANY, Kansas City, Mo: Deere's Patent Steel Frame Steel Plow and Prairie King Broadcast Seeder. It is claimed by the manufacturers that the Prairie King Seeder will sow all kinds of grain, also salt or any kind of fertilizers, without any extra plates or attachments. The point is made that it does not sow when the team stops, nor does the grain continue running on the ground when the machine is at rest.

J. C. PETMECKY, Austin, Texas: Breech and Muzzle Loading Shot Guns, Rifles and Pistols of all kinds. Ammunition and Sporting Goods in large variety.

ASPINWALL MFG. COMPANY, Three Rivers, Mich.: Aspinwall Potato Planter. It is claimed by the manufacturers that this implement will mark, furrow, drop and cover, all in one operation. Also that fertilizer is distributed when wanted.

E. C. MEACHAM ARMS COMPANY, St. Louis: Price current No. 440. Guns, Rifles, Bicycles, Trycicles, Ammunition, &c.

JOHN A. ROEBLING'S SONS COMPANY, Trenton, N. J.: Iron and Steel Wire Rope, Iron, Steel and Copper Wire, Galvanized Telegraph Wire, Insulated Electric Wires, Wire Cloth and Netting, &c.

BRADLEY & VROOMAN, Chicago: Crown Mixed and Paste Paints for house, floor, barn or vehicles.

B. F. AVERY & SONS, Fort Worth, Texas: Road Carts, Avery No. 1 and 2 Road Carts, Avery No. 3 Phaeton Cart. It is stated that there is no elm nor ash used in the construction of these Carts, but only the best of hickory.

BOOKWALTER, BRO. & CO., Miamisburg, Ohio, state that having had many inquiries regarding prices of Wheels for 1891, they will, until further notice, accept orders for Wheels under their quotations of December 1, 1890, to be entered and invoiced at the prices ruling upon the date of the receipt of such orders by them. They further state that their customers shall have the benefit of any decline in their prices upon any portion of such orders which may be unfilled at the time of such decline.

S. BAKER & CO., Buffalo, N. Y.: Whips and Lashes. The plan adopted for selling their Whips is to send an assortment subject to approval, the manufacturers paying freight or express on same. They also make a point of selling but one firm in a locality.

GALE MFG. COMPANY, Albion, Mich.: Plows, Walking, Combination Walking, Steel Three-Wheel Sulky, Combination Three-Wheel Sulky and Chilled Three-Wheel Sulky Plows, Spring Tooth Cultivators, Broadcast Seeders, Horse Rakes, Beam Harvesters, Disk Harrows.

HAWORTH & SONS, Decatur, Ill.: Planting Machinery, Haworth Check Rower and Haworth Corn Planter. It is stated that the Planter is light and strong, all of the exposed castings being of malleable iron. The manufacturers furnish to order with the Planter either of three styles of Check Rowers, Steel Bar, Combined Crossover or Side Wires.

AVERY PLANTER COMPANY, Peoria, Ill.: Monarch Rotary Junior Planters, Nos. 1 and 2, and Avery Speechless Cultivators.

STRIEBY & FOOTE, Newark, N. J.: Fine Carriage Forgings, Step Pads, Gear Irons, Ring Bolts, Body Loops, Axle Clips, Fifth Wheels, &c. A discount sheet accompanies their catalogue.

NATIONAL HORSE NAIL COMPANY, Vergennes, Vt., issue an 1891 Calendar, calling attention to their Champlain Horse Nails. Full size cuts of their Short Head and Regular Head Horse Nails are shown, also a colored picture entitled "'Twixt Love and Duty."

AVERY PLANTER COMPANY, Kansas City, Mo.: The Freeman Wagon End Broadcast Sower. The manufacturers say that it is adapted to sow wheat, oats, rye, barley, flax, buckwheat, clover, timothy, millet, Hungarian or other Seeds any desired quantity per acre.

PHILLIPS & FERGUSON, 48 Beekman street, New York: Prepared Calcimine, white and in colors, also Lump Chalk, Gilders' Whiting, Commercial Whiting, American Paris White, Spanish Whiting, Linseed Oil Putty, Kiln Dried and Bolted Paris White, &c.

DAVID BRADLEY MFG. COMPANY, Chicago: Bradley Disk Harrow, Walking Plows, Sulky and Gang Plows, Walking, Riding, Combined, Tongueless and Gopher Cultivators, Sulky Hay Rakes, Potato Diggers, Cotton Planters, &c. Particular attention is directed to the Bradley Disk Harrow and Square Corner Sulky and Gang Plows with Staggered Wheels.

GRAHAM TWIST DRILL COMPANY, Detroit, Mich.: Patent Groove Shank, Straight Lip Increase Twist Drills and Chucks, Milling Cutters, Reamers, &c. These Drills, it is stated, are rolled and hot forged, whereby the steel in each Drill is thoroughly worked and refined. The point is made that all their Drills from the smallest to the largest can be put in the Holder and taken out after the severest use without the use of wrench, key or drift, the grip out of the hand being sufficient. Attention is directed to the advertisemeut of the company which appears in this issue.

Travelers.

THE NORTHWESTERN TRAVELING MEN'S ASSOCIATION held their annual convention at the Palmer House, Chicago, on the 30th ult. President J. C. Miller called the meeting to order. The financial report of the association was very satisfactory, showing a balance of $11,500 on hand and a total membership of 3500. The following officers were elected to serve for the ensuing year:

President.—George J. Reed.
Vice-presidents.—Illinois, C. H. Knight; Iowa, O. W. Hazzard; Minnesota, W. C. Corbett; Wisconsin, H. C. F. Schroeder; Indiana, W. J. Shinn; Missouri, W. H. Cleland; Michigan, P. H. Carroll; Ohio, O. P. Pindell; Kentucky, Nathan Uri; Kansas, D. E. Good; New York, S. F. Paul; Colorado, W. M. Gamble; Nebraska, E. Bruce; North Dakota, W. S. Stockdale; South Dakota, E. L. Beatty; California, J. J. McDonald; Montana, J. C. Maslin; Oregon, O. D. Frary; Washington, O. M. Boyles; Utah, George T. Odell.
Secretary and Treasurer.—C. H. Hinman.
Board of Directors.—James C. Miller, D. K. Clink, Isaac Meyer, Willis Young and W. H. Sharp.

A motion by N. M. Uri for the appointment of a committee of five members to investigate the subject of assessments, reserve fund and insurance generally, and to report at the next annual meeting, was adopted after an amendment was made including the board of directors in the committee.

Another motion, made by D. K. Clink, that a committee of 15 should be appointed to formulate plans for a world's congress of commercial travelers at Chicago during the World's Fair in 1893, was also adopted. In the evening a banquet was held, at which the following toasts were responded to as designated:

Address of welcome, George J. Reed.
"The Northwestern Traveling Men's Association; Its Past, Present and Future," J. C. Miller.
"Our Sister Associations," Conrad Witkowsky.
"The Commercial Traveler and the World's Fair," H. H. Rood.
"Transportation," D. K. Clink.
"The Hotels, the Home of the Commercial Traveler," J. L. Howe.
"Our Customers," J. G. Davis.
"The Ladies," George B. Shaw.
"Our Country," H. W. K. Cutter.
"The Commercial Traveler Twenty-five Years Ago and Now," Samuel Pike.
"The Commercial Traveler an Important Factor in the Development and Civilization of Our Country," J. W. Richards.
"The Press," Charles Eugene Banks.
"The Roll of Honor—the Dead of 1890," T. S. Quincey.

It is Reported—

THAT John D. Kirk has bought out the business of Bucklen & Co., Franklin Falls, N. H., and will make a specialty of Farming Tools and Hardware.

That Wheeler and Adamson of Riverton, Iowa, have sold their Hardware and Agricultural Implement business to Marvin & Co. of the same place.

That Case & Johnson have embarked in the Hardware business at Parker, Kan.

That A. W. Baker, Jr., has retired from the Hardware and Paint firm of Baker Bros. & Co., Fitchburg, Mass. The business will be continued as heretofore by E. N. Cummings and G. F. Shedd under the firm name of Cummings & Shedd.

That the King Hardware Company have been organized at Anita, Iowa., with a capital stock of $10,000.

That J. M. Coombs, of Coombs & Co., Fort Wayne, Ind., will leave this month for Baden-Baden, Germany, where he will remain for probably a year.

That N. J. Hogeboom & Son will continue the Hardware and Stove business formerly conducted by T. M. Wylie, at Tampico, Ill.

That F. B. Gleason, dealer in Hardware, Brattleboro, Vt., has purchased the Hardware business of H. A. Putnam at Whitman, Mass.

That Geo. W. Toms & Co., Central City, Iowa, have disposed of their Hardware business to James Stife.

That James T. Boney has succeeded to the Hardware, Stove and Agricultural Implement business of J. W. Baker, Cairo, Mo.

That Col. O. F. Lochhead is negotiating for the purchase of the Hardware business of Geo. E. Breck & Co., Lansing, Mich.

That G. Hunter, Hardware and Harness, Hawarden, Ia., has disposed of his stock to J. W. & D. Brunskill, who will continue the business.

That Clark & Co., Hardware dealers at Jamestown, N. Y., have moved to a new location.

That S. E. Prather & Co. and J. K. McCoy & Co., Agricultural Implement dealers, Sprinfield, Ill., have consolidated, and will hereafter be known under the style of the Prather & McCoy Company.

That W. H. Richardson, dealer in Hardware at Mexia, Texas, has sold out to Grover, David & Freeman.

That Bradley, Phillips & Co., Harrison, Ark., were burned out recently.

That the Harrison Hardware Company, dealers in Hardware, Agricultural Implements, &c., Harrison, Mich., has been dissolved, and the entire business, purchased by T. H. Lees, who will continue it under his own name.

That N. C. Dixon & Co., Franklin, Vt., has sold out to Henry Lantman.

That J. S. Condell & Co. are a new Hardware firm at Springfield, Ill.

That the Doniphan Hardware and Implement Company of Doniphan, Mo., have disposed of their business to J. R. Wright. Mr. Wright is well known to the trade, and in referred to as entirely capable of successfully conducting the business thus acquired.

That the Spokane Hardware Company will erect a new building at Spokane Falls, Wash.

That Albert Morse will engage in the Hardware business at Singleton, Montana.

Paints and Oils.

It should be understood that the prices quoted in this column are strictly those current in the wholesale market, and that higher prices are paid for retail lots. The quality of goods frequently necessitates a considerable range of prices.

Whilst operations on a large scale figure with no prominence in any branch of the Paints or Oils markets, the general distribution seems to have been more satisfactory than during any previous week since early in December, and, taken as a whole, the results are more satisfactory. Some surprise is expressed that no change in prices of White Lead has been announced by corroders, but there is a growing impression that a revision is unlikely to be made, and buyers are acting upon that idea. More or less disturbance is caused by offers and alleged offers of Western Linseed Oil at very low prices, but the peculiar conditions under which those offers are made, are more clearly understood, and the effect is less now than it has been of late. On the balance of the list there is practically to note outside of the routine business and unimportant fluctuation in values.

Paints and Colors.

White Lead.—As noted in the above summary, corroders have made no changes in prices, and there is less belief that any alteration is contemplated, for the present at least. Lack of information on that point has been annoying and doubtless is so at the present time, but the policy of the trust in saying nothing one way or another is beginning to bear fruit. Owing to the uncertainty that has prevailed, jobbers permitted their supplies to become practically exhausted. Other large buyers have done the same. The result is that orders are now beginning to come along quite as freely as usual at this season of the year, and evidence is wanting that inferior Pigment has replaced the corroders' product to any considerable extent during the period of uncertainty. The upward turn in prices of Pig Lead has had a certain amount of bearing, the operations upon watchful buyers, not a few of whom would appear to have abandoned the idea that a reduction will be made on White Lead until outside competition forces it.

Red Lead and Litharge.—There has been rather more business in these goods, chiefly on orders from buyers who, permitting their supply to run very low in expectation of prices being reduced, are now obliged to purchase in order to meet imperative requirements.

Zincs.—Sales have been rather better the past week, although by no means heavy, and the current demand is similar to that usually experienced in mid-winter. No changes have taken place in prices of either domestic for foreign brands.

Colors.—The market for Dry Colors has undergone no change. Prices stand practically the same as they were a week ago, and, while business is a trifle livelier, operations are of strictly routine character. Nothing new has transpired in the market for Colors in Oil.

Oils and Turpentine.

Linseed Oil.—Reports have had circulation to the effect that Western product has been offered at as low as 49¢, delivered here, and there are also rumors that the trust intend to store some of their product here with a view to competing more successfully against local manufacturers. These rumors, however, appear to rest on very slender foundation. As a matter of fact, it is not clear that Western brands can actually be obtained at less than 52¢ here, even in carload lots, and offers of small lots, except by jobbers, cannot be traced out. While the outside product may be pushed with some success, it does not appear that city crushers are very much alarmed. No change has been made in their prices.

Lard Oil.—City pressers have advanced their prices about 1¢ ₱ gallon, and there is a similar rise on outside brands, 49¢ @ 50¢ being the range on prime quality. This advance was due chiefly to higher cost of raw material, but improved demand has also helped to stiffen the market.

Fish Oils.—There is no crude Whale Oil in first hands, and supplies of Sperm and Menhaden are well under control. Prices are therefore held quite firmly, and while quiet, the market for the manufactured products remains very steady.

Cotton Seed Oils.—Neither home or export buyers have operated with any freedom, and the market presents a dull appearance at the present time. Prices are, however, holding very steady, there being no pressure to sell.

Miscellaneous.—Outside of the routine distribution there has been no movement in Cocoanut, Olive or Palm Oils, and prices show only slight variation.

Spirits Turpentine.—Liberal arrivals and slow distribution have combined to considerably increase the accumulation of supplies here. Receivers have now upward of 3500 barrels on hand. Prices are rather weak at 38¢ for regular and 38¾¢ @ 39¢ for machine barrels.

Exports.

PER BARK GLENEIDA, DECEMBER 16, 1890, FOR DUNEDIN, NEW ZEALAND.

By Arkell & Douglas.—32 gross Snaps, 2 dozen pairs Hames, 6 gross Curry Combs, 1 gross Drills, 3 dozen Reflectors, 1 dozen Wringers, 1 dozen Molasses Gates, 4 Scales, 1 dozen sets Axles, 11 dozen Axes, 3 Boring Machines, 675 pounds Horse Nails, 1 dozen Mangles, 1 dozen Wringers, 4 dozen Hammers, 4 dozen Wrenches, 6 dozen Forks, 3 Pumps, 2 dozen Churns, 224 pounds Tacks, 2 dozen Picks, 3 dozen Saws, 3 dozen Hammers.

By R. W. Forbes & Son.—3 dozen Axes.

By F. B. Wheeler Company.—45 Pumps, 1 case Hardware, 112 pounds Rubber Packing, 20 Wrenches, 500 Bolts, 1 case Hardware.

By Joseph Dixon Crucible Company.—1450 pounds Crucibles.

By Henry Disston & Sons.—22 pounds Saws.

By Arkell & Douglas.—1530 pounds Axles.

By Dunbar, Hobart & Co.—6720 pounds Nails.

By W. H. Crossman & Bro.—19 packages Lamp Goods.

By L. S. Crossmond & Co.—6 cases Agricultural Implements, 2 cases Plows.

By W. K. Freeman.—6 Scales, 820 pounds Handled Axes, 361 pounds Hardware, 1825 pounds Axes.

FOR LYTTLETON.

By Dunbar, Hobart & Co.—2240 pounds Nails.

By Coombs, Crosby & Eddy.—6 dozen Hardward, 8 Churns.

By A. Field & Co.—1 case Carriage Hardware.

By R. W. Forbes & Son.—4 packages Carriage Hardware.

By Arkell & Douglas.—14 dozen Forks

By H. W. Peabody & Co.—2500 pounds Horse Nails, 8 cases Edge Tools, 3 dozen Spades, 1 case Forks, 8 packages Hardware, 96 Pumps, 2400 pounds Horse Nails, 17 packages Lampware, 2 cases Farming Implements, 16 packages Hardware, 12 dozen Rat Traps, 20 sets Axles, 1 case Bolts, 2 boxes Hardware, 3 dozen Brushes.

FOR DUNEDIN AND LYTTLETON.

By R. W. Cameron & Co.—1 case Axles, 7 cases Horse Nails, 1 case Glue, 2 dozen Wringers 1 package Saws, 690 pounds Axles, 12 dozen Hammers, 20 Hatchets, 5 Scales, 5 dozen Axles.

PER SHIP CHARGER, DECEMBER 17, 1890.

FOR SYDNEY, N. S. W.

By J. L. Mott Iron Works.—49 packages Cast Iron Stoves.

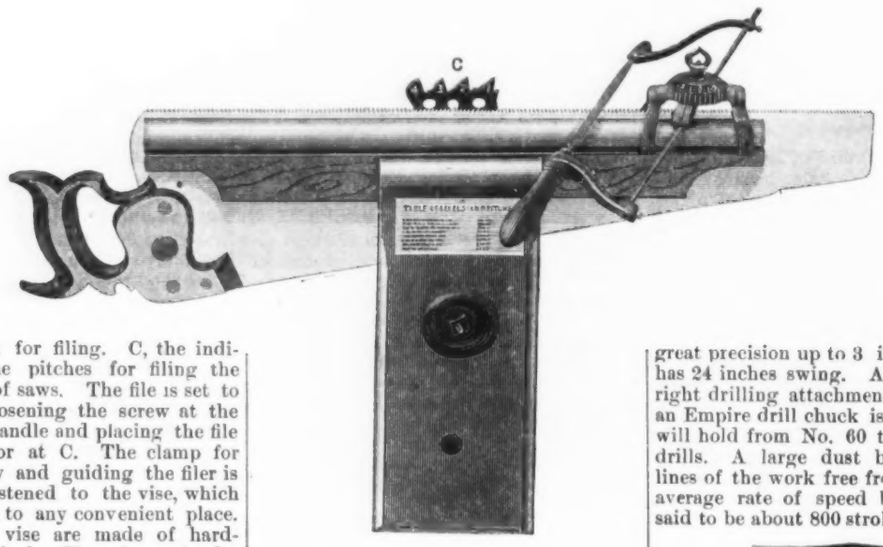
By C. B. Seabury.—2 boxes Hardware, 10 boxes Tools.

By W. & B. Douglas.—48 Pumps.

By Edward Miller & Co.—26 packages Lamp Goods.

Roth's Saw Filer, Clamp and Vise.

E. Roth & Bro., New Oxford, Pa., are introducing a saw filer, clamp and vise, as illustrated herewith, the cut showing a hand-saw in the clamp and the filer in position for filing. C, the indicator, gives the pitches for filing the various kinds of saws. The file is set to the pitch by loosening the screw at the arm at the file handle and placing the file on the indicator at C. The clamp for holding the saw and guiding the filer is permanently fastened to the vise, which may be screwed to any convenient place. The clamp and vise are made of hardwood, oil finished. The clamp is described as closing very neatly at the ends, so that the saw is held close and will not vibrate while filing.



Roth's Saw Filer, Clamp and Vise.

The Acme Steel Belt Hook.

W. O. Talcott, Providence, R. I., is introducing a belt hook, as illustrated in Fig. 1. It is described as being made of cold rolled sheet steel with the teeth or points sharp, to admit of the belt being readily driven on the teeth with a hammer. The teeth are clinched from the outer edge of the hook toward the center of the joint, as in Fig. 2. The result is referred to as securing a very strong as well as light, smooth joint in the belt. The point is made that this hook is well adapted for high speed belts where strength and lightness are both required.

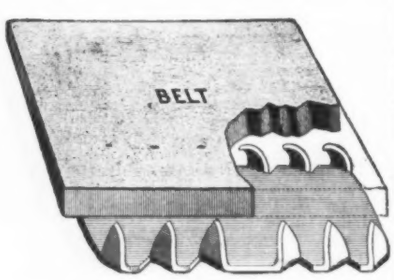


Fig. 1.—Acme Steel Belt Hook.

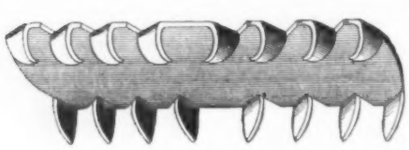


Fig. 2.—Acme Belt Hook Applied to Belt.

Victor Scroll Saw.

The Seneca Falls Mfg. Company, Seneca Falls, N. Y., have brought out an improved machine designed for pattern, model and cabinet makers, carpenters, builders and woodworkers generally, who desire a machine of large capacity suitable for close and accurate work. In the accompanying illustration is presented a general view of this machine, provided with an adjustable tension in connection with an upper spindle, which may be varied to suit the operator. It is provided with an iron tilting table 18 inches in diameter, which may be changed to any angle for sawing inlaid work. The driving wheel is heavy, being 24 inches in diameter. The foot power has a walking motion, by which the manufacturers claim much more power can be obtained with less fatigue than with other forms while enabling the operator to run the machine with both feet sitting or one foot standing. It is arranged to use regularly 8 inch saw blades, but can be adjusted to use 5-inch saw blades for light work if desired. It has a capacity to cut with great precision up to 3 inches thick and has 24 inches swing. An adjustable upright drilling attachment provided with an Empire drill chuck is provided, which will hold from No. 60 to $\frac{3}{16}$ inch twist drills. A large dust blower keeps the lines of the work free from sawdust. The average rate of speed by foot power is said to be about 800 strokes per minute.

The Victor Scroll Saw.

John Maxwell, 259 Pearl street, New York, manufacturer of bird cages, is introducing an improvement, which he has had patented, in the construction of brass cages. The improvement consists in the horizontal bands being drilled through which the perpendicular wires pass, the perpendicular wires being crimped immediately above and below the bands. The advantage claimed is that this method

does away with the necessity of soldering, pressing or riveting. Attention is directed to the durability and cleanliness which this plan insures.

The Zimmerman Carpet Stretcher.

The Beyer Mfg. Company, East Palestine, Ohio, are introducing a carpet stretcher, the manner in which it is operated being shown in the accompanying

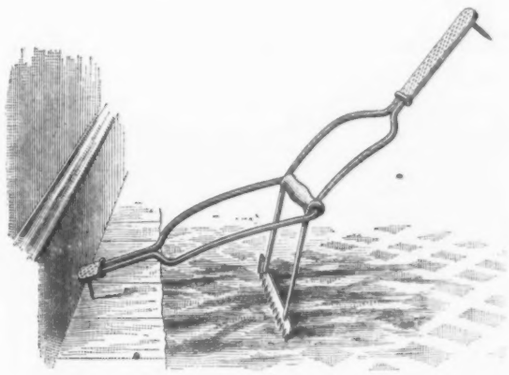


Fig. 1.—Drawing the Carpet in Position.

illustration. The length of the stretcher between the points at the ends is about 2 feet, while the tooth piece which fastens in the carpet is 10 inches long. These measurements will give an idea of the size of the article. It is stated the material used is the best of steel, and the leverage so strong that a 12-year old girl can stretch the heaviest Brussels carpet with ease. The point nearest the teeth is driven into the floor near the base board, and the teeth stuck into the carpet, Fig.

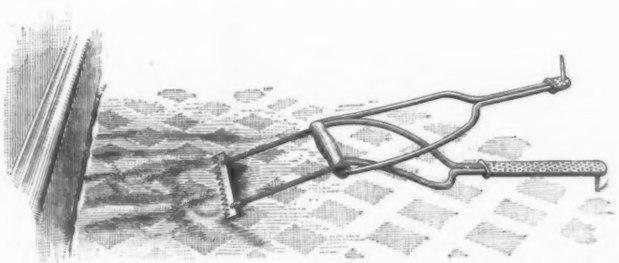


Fig. 2.—The Carpet Being Held in Position for Tacking.

1. By pressing down the other end of the stretcher the carpet is drawn to the base board. When the carpet has been drawn sufficiently the back point of the stretcher is driven through the carpet into the floor, and holds the carpet in the desired position. The point at the base board is now turned back, Fig. 2, leaving a clear place for tacking the carpet.

Royal Flat Ware.

C. Rogers & Bros., Meriden, Conn., are putting upon the market Royal pattern

Royal Flat Ware.

flat ware, as illustrated herewith. These goods are made in silver and old silver, and the design patented. This pattern is shown in a full line of spoons, forks, ladles, &c., and presents a handsome appearance.

Williams' Revolving Flower Stand.

Beatrice Novelty Works, F. D. Kees, proprietor, Beatrice, Neb., are putting on the market a revolving flower stand, as illustrated herewith. The stand is described as having a central pillar resting on a four pronged base fitted with casters, having supports for pots held in position by collars attached to the pillar by set screws. These cellars vary in number with the size of the stand, and are adjustable to any hight on the pillar. Above the collars are rings slotted so as to form a receptacle for the bracket wires, which are set in at the top and the bottom with projections, on which rest metal pans, and in these pans the pots are set. The brackets are made of Nos. 5 and 6 wire, which, it is stated, will sustain a weight of 25 pounds each. The pans will hold pots as large as 7 inches. The different tiers can be lowered or raised at pleasure, and the brackets can be turned in various directions to receive the sunlight. Additional space may be had by placing boards across the top wires of the supports and resting pots on them. The point is made that when not in use the stand may be takon apart in a few minutes and set in a corner or an out of-the-way-place. These stands are made in several sizes, holding from 13 to 30 pots, and standing from 3½ to 5 feet in hight. They occupy from 2 to 2½ feet in diameter, and are painted green with gilt trimmings, or any other color desired. The stands are referred to as being light, combining at once strength, compactness, an ornamental appearance, ease of movement from one place to another and cheapness in price. The slotted supports are also made to fasten to the outside of a window casing, forming a neat and attractive ornament, holding from 1 to 30 pots, taking up but little space and removable at will.

Williams' Revolving Flower Stand.

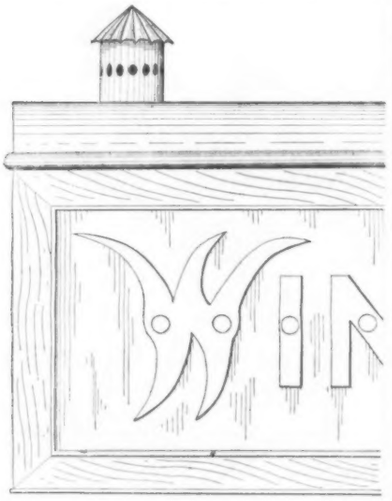
Sure Grip Ice Tongs.

J. Brinkerhoff & Son, Auburn, N. Y., are putting on the market ice tongs for office and family use, as illustrated herewith. The improved feature in these tongs consists in the four prongs being arranged at right angles to each other, forming locking jaws. The manufacturers state that it is impossible for the ice to escape, no matter how small or irregular it may be, and that it is impossible for the ice to turn on the points when taken hold of. These goods are made both tinned and plain, opening 15 inches. They are referred to as being carefully made and as being very strong, capable of easily handling a 50-pound cake of ice.

Sure Grip Ice Tongs.

Illuminated Signs.

Illuminated signs, especially when made from glass of various colors, or from colored glass with gold letters, are very attractive, as they can be read at night as well as in the



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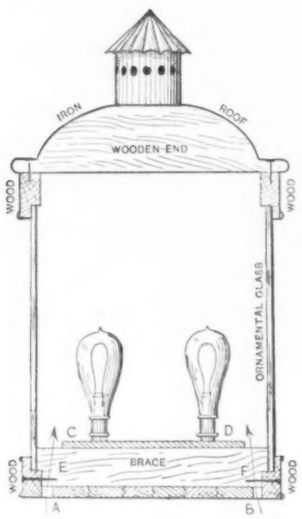

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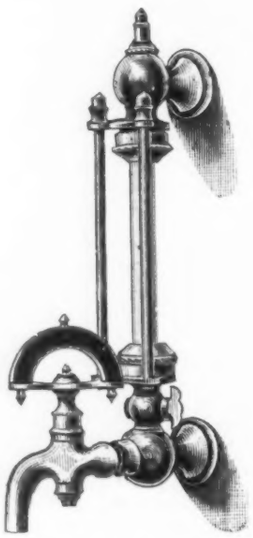

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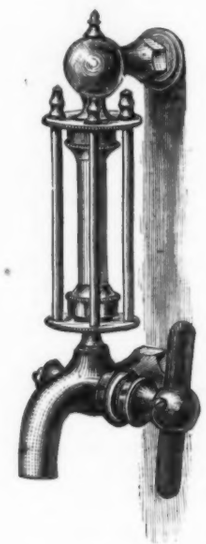

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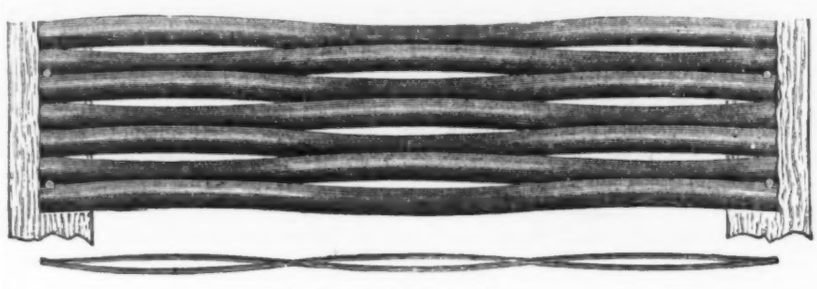

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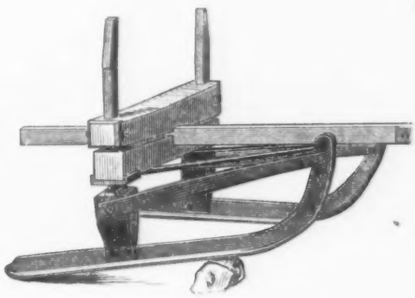

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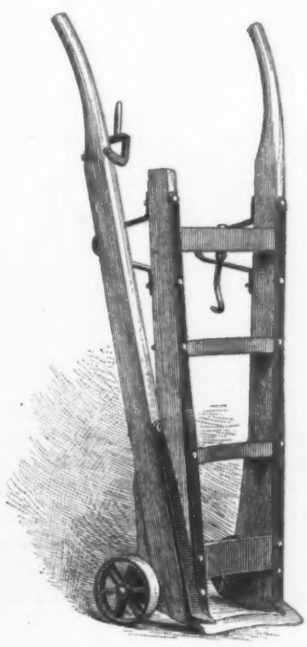

Mallory's Barrel Truck.

and by pressing down on the lever the barrel is given a rotary motion, and, it is stated, is thus automatically loaded on the truck by merely lifting with the lever. While the barrel is elevated, the truck is swung underneath.

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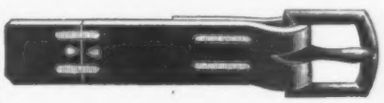

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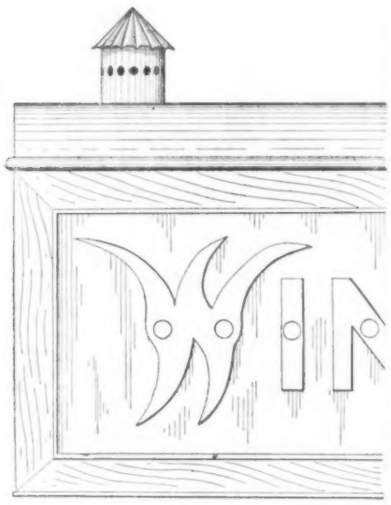

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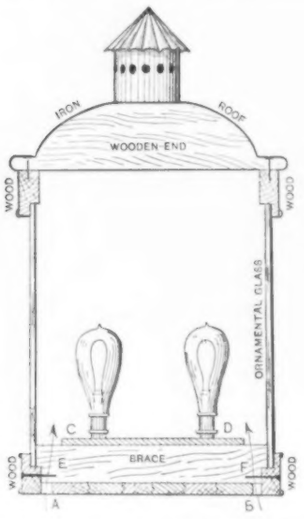

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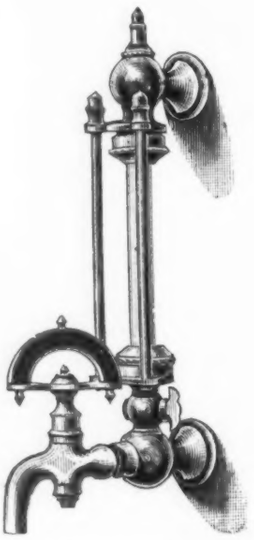

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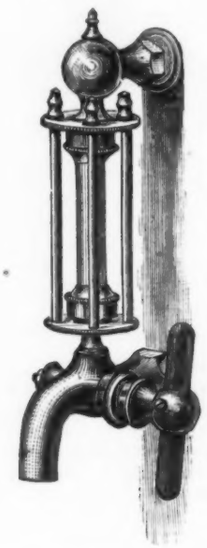

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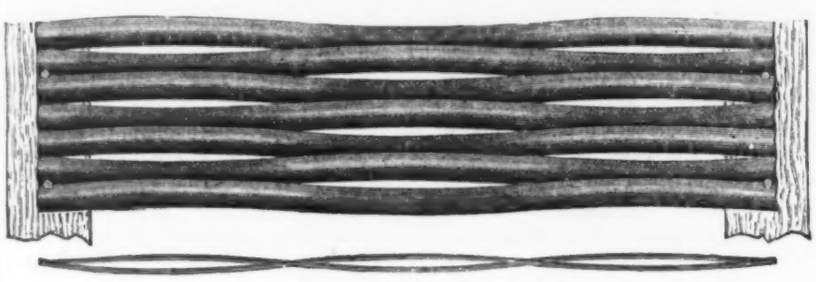

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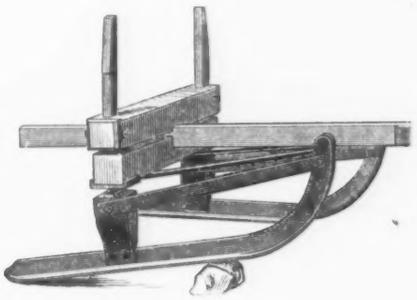

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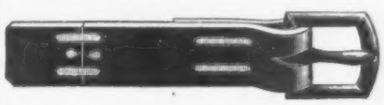

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JANUARY 7, 1891.

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Adjusters, Blind.

Domestic.....₩ doz $3.00, 33⅓&
Excelsior.....₩ doz $10.00.....50&10&2%
Washburn's Self-Locking.....20@20&10%

Ammunition.—

Caps, Percussion, ₩ 1000—
Hicks & Goldmark's and Union Metallic Cartridge Co.
F. L. Waterproof, 1-10's.....34@35¢
E. B. Trimmed Edge, 1-10's.....46@48¢
E. B. Grnd. Edge, Cent. Fire, 1-10's.....46@47¢
Musket Waterproof, 1-10's.....50¢
G. D.....28¢
S. B. Genuine Imported.....45¢
Eley's E. B.....54¢ @ 55¢
Eley's D Waterproof, Central Fire...$1.60

Cartridges—
Rim Fire Cartridges.....50&5&2%
Rim Fire Military.....15&2%
Cent. Fire, Pistol and Rifle.....25&5&2%
Cent. Fire, Military and Sporting 15&5&2%
Blank Cartridges, except 22 and 32 cal., additional 10 % on above discounts.
Blank Cartridges, 22 cal., $1.75.....2%
Blank Cartridges, 32 cal., $3.50.....2%
Primed Shells and Bullets.....15&5&2%
B. B. Caps, Round Ball, $1.75.....2%
B. B. Caps, Con. Ball, Swgd., $2.00.....2%

Primers—
Berdan Primers, $1.00.....2%
B. L. Caps (for Sturtevant Shells) $1.00.....2%
All other Primers, $1.20.....2%

Shells—
First quality 4, 8, 10 and 12 gauge 25&10&2%
First quality, 14, 16 and 20 gauge ($10 list).....30&10&2%
Prize.....40&2%
Star, Club, Rival and Climax brands, 33⅓&10&2%
Seibold's Comb. Shot Shells.....15&2%
Brass Shot Shells, 1st quality.....60&2%
Brass Shot Shells, Club, Rival, Climax.. 65&2%

Shells Loaded—
Standard List, July 19, 1890..40&5@40 &10%

Wads—Price per M.

U.M.C.&W. R. A.—B. E., 11 up...	68¢	Die 20&2
U.M.C.&W. R. A.—B. E., 9&10...	82¢	
U.M.C.&W. R. A.—B. E., 8.....	96¢	
U.M.C.& W.R. A.—R. E., 7.....	$1.10	
U.M.C.&W. R. A.—P. E., 11 up..	1.15	
U.M.C.&W. R. A.—P. E., 9&10..	1.50	
U.M.C.&W. R. A.—P. E., 8.....	1.70	
U.M.C.&W.R. A.—F. E., 7.....	1.80	
Eley's B. E., 11 up.		$1.75
Eley's P. E., 11@20.		2.80

Anvils.—

Eagle Anvils, ₩ ℔ 10¢.....15@15&5%
Peter Wright's.....11½@12¢
Armitage's Mouse Hole.....10½@11¢
Armitage's Mouse Hole. Extra...12.@12½¢
Trenton.....10.@10½¢
Wilkinson's.....10½@11¢
Moore & Barnes Mfg. Co.....33⅓&

Anvil Vise and Drill—
Millers Falls Co., $18.00.....20%
Cheney Anvil and Vise.....25%
Allen Anvil and Vise, $3.00.....40&10%
Star.....45&5%

Apple Parers—See Parers, Apple, &c.

Augers and Bits—

Douglass Mfg. Co.
Wm. A. Ives & Co.
Humphreysville Mfg. Co.
French, Swift & Co. (F. H. Beecher...
F. S. & W. Co.
Rockford Bit Company. } 70&10%
Cook's, Douglass Mfg. Co.....55%
Cook's, N. H. Copper Co.50&10&50&10&5%
Ives' Circular Lip.....60%
Patent Solid Head.....30%
C. E. Jenning & Co., No. 10, extension lip.....40%
C. E. Jennings & Co., No. 30.....60%
C. E. Jennings & Co., Auger Bits, ₩ set, 32⅛ quarters, No. 5, $5; No. 30, $3.50.20%
Lewis' Patent Single Twist.....45%
Russell Jennings' Augers and Bits.25&10%
Imitation Jennings' Bits.....60@60&5%
Snell's Jennings Pattern.....60%
Pugh's Black.....20%
Rockford, Jenning's Pattern.....60%
Car Bits.....60@60&10%
Car Bits, P. S. & W. Co.....60&10%
Snell's Car Bits.....60%
L Hommodieu Car Bits.....15&10%
Forstner Pat. Auger Bits.....20%
Cincinnati Bell-Hangers' Bits...30&10%

Bit Stock Drills—
Morse Twist Drills.....50&10&5%
Standard.....50&10&5%
Cleveland.....50&10&5%
Syracuse, for metal.....50&10%
Syracuse, for wood (wood list).30&20&5%
Williams' or Holt's, for metal.50&10&10%
Williams' or Holt's, for wood...40&10%
Cincinnati, for wood.....30&10%
Cincinnati, for metal.....45&10%

Expansive Bits—
Clarks' small, $18; large, $26 *.35@35&5%
Ives' No. 4, ₩ doz $60.....40%
Swan's.....40%
Steer's, No. 1, $26; No. 2, $22.....35%
Stearns' No. 2, $48.....20%

Gimlet Bits—
Common.....₩ gross $2.75@3.25
Diamond.....₩ doz $1.10.....25&10%
Bee.....25@25&5%
Double Cut, Shepardson's.....45@47&10%
Double Cut, Ct. Valley Mfg. Co...30&10%
Double Cut, Hartwell's, ₩ gro.....$5.25
Double Cut, Douglass'.....40&10%
Double Cut, Ives'.....60@60&10%

Hollow Augers—
Ives.....
French, Swift & Co.....
Douglass'..... } 33⅓@ 33⅓&10%
Bonney's Adjustable, ₩ doz $48...40&10%
Stearns'.....20&10%
Ives' Expansive, each $4.50.....50&5%
Universal Expansive, each $4.50.....20%
Wood's.....25@25&10%
Cincinnati Adjustable.....25&10%
Cincinnati Standard.....25&10%

Ship Augers and Bits—
L'Hommedieu's.....15&10@15&10&5%
Watrous'.....15&10@15&10&10%
Snell's.....15&10@15&10&5%
Snell's Ship Auger Patt'n Car Bits, 15&10@15&10@5%

Awl Hafts—See Hafts, Awl.

Awls, Brad Sets, &c—

Awls, Sewing, Common ₩ gr $1.70, 35%
Awls, Should. Peg, ₩ gr $2.45, 40@40&10%
Awls, Pat. Peg...₩ gr 63¢ ... 40@40&10%
Awls, Shouldered Brad..2.70 ₩ gr.....35%
Awls, Handled Brad...$7.50 ₩ gr.....45%
Awls, Handled Scratch ₩ gr, $7.50.35&10%
Awls, Socket Scratch, ₩ doz, $1.50.25@30%

Awl and Tool Sets—See Sets, Awl and Tool.

Axes—

	Plain.	Beveled.
First quality	$8.00	$8.50
Others	7.50	8.0(

Axle Grease—See Grease, Axle.

Axles—

No. 1, 4¼@5¢, No. 2 5½@6¼% } 3 % cash
Nos. 7 to 14.....55&5%
Nos. 15 to 18.....47½%
Nos. 19 to 22.....70%
Concord Axles, loose collar.....5¢@6¢
Concord Axles, solid collar.....6¢@7¢
National Tubular Self-Oiling..... 33⅓&33⅓&5%

Bag Holders.—See Holders, Bag.

Balances—

Spring Balances.....40%

	No. 2000	20	30
Chatillon, ₩ dos....	$0.80	0.95	1.75 net

Chatillon Straight Balances.....40%
Chatillon Circular Balances.....50&10%

Bars.

Crow—
Cast Steel.....₩ ℔ 4½¢
Iron, Steel Points..... ..₩ ℔ 3¾¢

Basins, Wash—

Standard Fiberware, No. 1, 10½-inch, $2; 12-inch, $2.25; 13½-inch, $2.75; 15-inch, $3.25.

Beams, Scale—

Scale Beams, List Jan. 12, '82...50&10@ 50&10&5%
Chatillon's No. 1.....40%
Chatillon's No. 2.....50%
Custer's.....33⅓&

Beaters—

Egg—
Dover.....₩ doz $1.50
Duplex (Standard Co.)..₩ doz $1.25
Rival (Standard Co.)..₩ doz $1.00
Duplex Extra Heavy (Standard Co.)... ₩ doz $3.50
Bryant's.....₩ gro $14.00
Double (H. & R. Mfg. Co.), ₩ gro. No. 0, $12.00; No. 1, $15.00; No. 2.....$36.00
Easy (H. & R. Mfg. Co.).....₩ gro $12.00
Triple (H. & R. Mfg. Co.).....₩ gro $16.50
Spiral (H. & R. Mfg. Co.).....₩ gro $4.50
Improved Acme (H. & R. Mfg. Co.)..... ₩ gro $9.00
Paine, Diehl & Co.'s.....₩ gro $24.00
Silver & Co.....₩ doz $5.50

Culinary—
Keystone, P.D.&C., Each, No. 1, $1; No. 2, $2.....20%

Bells—

Cow—
Common Wrought.....60&10%
Western.....20&10%
Western, Sargent's list.....70&10%
Kentucky, "Star".....20&10%
Kentucky, Sargent's list.....70&10%
Dodge, Genuine Kentucky....70&70&10%
Texas Star.....50&10&50&10&5%
Call.....40@40&5%
Farm Bells.....₩ ℔ 3¢@3½¢
Steel Alloy Church and School Bells..40%

Door—
Gong, Abbe's.....33⅓&10%
Gong, Yankee.....45&10%
Gong, Barton's.....40&10@50%
Crank, Taylor's.....25&10%
Crank Brooks'.....50&10&2%
Crank Cone's.....10%
Crank, Connel's.....20&10%
Lever, Sargent's.....60&10%
Lever, Taylor's Bronzed or Plated....net
Lever, Taylor's Japanned.....25&10%
Lever, R. E. M. Co.'s.....50&10&2%
Pull, Brook's.....50&10&2%
Pull, Western.....25&10%

Electric,
Wollensak's.....20%
Bigelow & Dowse.....20%
Taylor's.....20%

Hand—
Light Brass.....75&10%
Extra Heavy.....65&10%
White Metal.....60&10&10%
Silver Chime.....33⅓&10%
Globe(Cone's Patent).....25&10@35%

Bellows—

Blacksmiths'.....60&5@65%
Molders'.....40@40&10%
Hand Bellows.....40&10@50%

Belting, Rubber—

Common Standard.....70@70&5%
Standard.....60&10&10@70%
Extra.....50&10@60%
N.Y.B.&P.Co., Carbon...50&5@50&10&5%
N.Y.B.&P.Co., Diamond....40&5@40&10%

Bench Stops—See Stops, Bench.

Benders, Upsetters, Tire.

Stoddard's Lightning Tire Upsetters..15%
Detroit Perfected Tire Bender.....15%

Bits—

Auger, Gimlet, Bit Stock, Drills, &c., see Augers and Bits.

Bit Holders—See Holders.

Blind Adjusters—See Adjusters, Blind.

Blind Fasteners—See Fasteners, Blind.

Blind Staples—See Staples, Blind.

Blocks—

Ordinary Tackle, list May 20, 1889... 60&10&10@70%
Cleveland Block Co., Mal. Iron.....50%
Moore's Novelty, Mal. Iron.....50%

Boards, Stove.

Wood Lined "Crystal".....50%
"Embossed".....50%
"Oxidized".....45%
Paper Lined Zinc.....55%
"Crystal".....55%
"Embossed".....55%
"Oxidized".....45%

Bolts—

Carriage, Machine, &c.—
Com. list June 10, '84.....70&10&5&2%
Genuine Eagle, list Oct., '84...75&10@80%
Phila. pattern, list Oct. 7, '84..80@80&10%
R.B.&W., old list.....70%
Machine, list Jan. 1, 1890..... 75&10@75&10&5%
Bolt Ends, list Jan. 1, 1890..... 75&10@75&10&5%

Door and Shutter—
Cast Iron Barrel, Square, &c..70@70&10%
Cast Iron Shutter Bolts.....70@70&10%
Cast Iron Chain (Sargent's list)....65&10%
Ives' Patent Door Bolts.....60%
Wrought Barrel.....70@70&10%
Wrought Square.....70@70&10%
Wr't Shutter, all Iron, Stanley's..60&10%
Wr't Shutter, Brass Knob, " ..40&10%
Wr't Shutter, Sargent's list.....60&10%
Wr't Sunk Flush, Sargent's list....55&10%
Wr't Sunk Flush, Stanley's list....50&10%
Wr't B.K.Flush. Com'n " ....55&10%

Stove and Plow—
Stove.....60%
Plow.....60&5%
R. B. & W., Plow.....55%

Tire—
Common, list Feb. 28, '83.....65%
Port Chester Bolt and Nut Company:
Empire, list Feb 28, '83.....65%
Keystone, Philadel., list Oct. '84...80%
Norway, Phila., list Oct. '84.....75%
American Screw Company:
Norway, Phil., list Oct. 16, '84.....75%
Eagle, Phil., list Oct. 16, '84.....80%
Philadel., list Oct. 16, '84.....80%
Bay State, list Feb. 28, '83.....65%
R.B.&W., Philadel., list Oct. 16, '84....80%

Borers, Tap.

Common and Rind.....20&10%
Ives's Tap Borers.....33⅓&5%
Enterprise Mfg. Co.....20&10&30%
Clark's.....33⅓@35%

Borax.....₩ ℔ 9½@10½¢

Boring Machines—See Machines, Boring.

Bow Pins—See Pins, Bow.

Boxes, Wagon.

Per ℔.....2½¢

Braces.—

American Bit Brace Co.:
Nos. 10, 12, 20.....60&10%
Nos. 11, 21, 24, 27.....70&10%
Nos. 22, 23, 25.....60&10&5%
Nos. 13, 26, 36, 37.....70&10&5%
Ball Braces, net.....$1.12 to $1.25¢
Amidon's
Barker's Imp'd Plain.....75&10@80%
Barker's Imp. Nickeled....65&10@70%
Ratchet.....75&10@80%
Eclipse Rachet.....60%
Globe Jawed.....40@40&10%
Corner Brace.....40@40&10%
Universal, 8 in., $2.10 10 in.....$2.25
Buffalo Ball.....$1.10@$1.15
Barber's,
Nos. 10 to 16.....80%
Nos. 30 to 33.....50%
Nos. 40 to 63.....50&10%
Saxton's,
Barker's Imp. Polished.....75&10@80%
Barker's Imp. Nickeled....65&10@70%
Ratchet, Polished.....50&10@60%
Ratchet, Nickeled.....40&10@50%
Buffalo Ball.....net, $1.10@$1.15
Bartholomew's,
Nos. 25, 27 and 30.....50&10@60&5%
Nos. 117, 118, 119.....70@70&5%
Common Ball, American.....$1.00@$1.10
Pray's Genuine Spofford's...50&5@50&10%
Fray's No. 70 to 120, 81 to 123, 207 to 414 50&10%
Ives' New Haven Novelty.....70@70&5%
New Haven Ratchet.....60&5@60&10%
Barber Ratchet.....60&5@60&10%
Barbers.....60&5%
Spofford.....60&5@60&10%
Osgood's Ratchet.....40&10@50%
P. S. & W. Co., Peck's Patent.....60%

Brackets—

Shelf plain, Sargent list, 55&10@55& 10&10%
Shelf, fancy, Sargent s list, 60&10@60 &10&10%
Reading, plain.....50&10@60&10&5%
Reading, Rosette.....6 &10@60&10&10%

Bright Wire Goods—See Wire.

Broilers—

Henis' Self-Basting. { Inch..... 9 10 9x11
Per doz $4.50 5.50 6.50
New Haven..... 50¢

Buckets, Well.

Galvanized—
Hill's.....₩ doz, 12 qt, $4.25; 14 qt, $5.25
Iron Clad.....₩ doz. 14 qt, $4.25@$4.50
Helwig's Flat Iron Band.....$3.75
Helwig's Wired Top.....₩ doz $4.00

Bull Rings—See Rings, Bull.

Butchers' Cleavers—See Cleavers Butchers'.

Butts—

Brass—
Wrought Brass.....75&10@80%
Cast Brass, Tiebout's'.....50%
Cast Brass, Corbin's, Fast.....33⅓&10%
Cast Brass, Loose Joint.....33⅓&10%

Cast Iron—
Fast Joint, Narrow.....50&10&5@60%
Fast Joint, Broad.....50&10@60%
Loose Joint.
Loose Joint, Japanned.
Loose Joint, Jap. with Acorns..
Parliament Butts. ..70&10 @ 70%
Mayer's Hinges.
Loose Pin, Acorns.
Loose Pin, Acorns, Japanned...
Loose Pin, Acorns, Japanned, Plated Tips.

Wrought Steel—
Fast Joint, Narrow.
Fast Joint, Lt. Narrow.
Fast Joint, Broad.
Loose Joint, Broad. .70&10
Table Butts, Back Flaps, &c .... @75%
Inside Blind, Regular.
Inside Blind, Light.
Loose Pin.....
Bronsed Wrought Butts.....50

Calipers—See Compasses.

Calks, Toe—

Gautier.....₩ ℔ 5½@6¢
Dewicks (Burke).....₩ ℔ 5½@6¢

Can Openers—See Openers, Can.

Cards—

Horse & Curry.....10&10&10&10%
Cotton.....10&10&10%
Wool.....10&10&10%

Carpet Stretchers—See Stretchers Carpet.

Carpet Sweepers—See Sw Carpet.

Cartridges—See Ammunition.

Casters—

Bed..... } Brass....55@55&10%
Plate..... } Others...60@60&10%
Shallow Socket.....
Deep Socket.....40&10%
Yale Casters, list May, 1884...30&10&40%
Yale, Gem.....60@60&5%
Martin's Patent (Phoenix).....45&10&50%
Payson's Anti-friction.....60@60&10%
Giant Truck Casters.....30%
Stationary Truck Casters.....50&10%
Socket Truck Casters.....50%

Cattle Leaders—See Leaders, Cattle.

Cement.

Victor Elastic.....5 ℔ pails ₩ ℔ 5¢

Chain—

Trace, Wagon and Fancy Chains, List revised April 21, 1890.....50& 10@60%

American Coil, in cask lots,

3-16	¼	5-16	⅜	7-16	½	⅝	¾
$7.75	5.45	4.55	4.00	3.65	3.50	3.40	3.30

Less than cask lots, add ½¢@1¢₩ ℔.
German Coil, list Oct. 6, 1890 50&10&5@60%
German Halter Chain, list Oct. 6, 1890 50&10&5@60%
Covert Halter.....60&2%
Covert Traces.....35@2%
Covert Heel Chain.....50&2%
Oneida Halter Chain.....60@60&5%
Galvanized Pump Chain.....₩ ℔ 5½@6¢
Jack Chain, Iron.....75&10&80%
Jack Chain, Brass.....75@75&10%

Chalk—

White.....₩ gr 50¢
Red.....₩ gr 70¢
Blue.....₩ gr 85¢
See also Crayons.

Chalk Lines—See Lines.

Chisels—

Socket Framing and Firmer.
P. S. & W.
New Haven.
Witherby. ..75 @ 75&10
Mix.
Ohio Tool Co.
Douglass.....75@75&5%
Buck Bros.....50%
Merrill.....60&10@60&10&5%
L. & I. J. White.....30@30&5%

Tanged and Miscellaneous.
Tanged Firmers.....40&10@50%
Butchers'.....$4.75@$5.00
Spear & Jackson's.....$5 to $
Buck Bros.....30%
Cold Chisels, ₩ ℔.....15@16%

Chucks—

Beach Pat.....each, $8.00.....20%
Morse's Adjustable,each, $7.00, 20@20&5%
Danbury.....each, $6.00, 30@30&5%
Syracuse, Bals Pat.....25%
Skinner's Patent Chucks.
Combination Lathe Chucks.....33⅓%
Universal Lathe Chucks.....40%
Independent Lathe Chucks.....40%
Drill Chucks.....15%
Union Mfg. Co.,
Victor.....$8.50, 25%
Combination.....40%
Universal.....40%
Independent.....40%

Churns.

Tiffin Union No. 1, 5 gallon...$3.25 each
Tiffin Union No. 2, 7 gallon...$3.75 each
Tiffin Union No. 3, 10 gallon...$4.25 each

Clamps—

R. I. Tool Co.'s Wrought Iron.....25%
Adjustable, Cincinnati.....15&10%
Adjustable, Hammers.....15%
Adjustable, Stearn's.....30@30&10%
Stearn's Adjustable Cabinet and Corner.....30@30&10%
Cabinet, Sargent's.....60%&10%
Carriage Makers', Sargent's.....70&10%
Carriage Makers', P., S. & W. Co..40&10%
Eberhard Mfg. Co.....40&5@40&10%
Warner's.....40&10@40&10&5%
Saw Clamps, see Vises, Saw Filers'.
Carpenters', Cincinnati.....25&10%

Cleavers.

Butchers'.

Bradley's.....25@30%
L. & I. J. White.....20&5%
Beatty's.....40@40&5%
New Haven Edge Tool Co.'s.....40%
P., S. & W.....33⅓&5@33⅓&10%
Foster Bros.....30%
Schulte, Lohoff & Co.....40@40&5%

Clips—

Norway, Axle, ¼ & 5-16.....55&5&5%
2nd grade Norway Axle, ¼ & 5-16 65&5%
Superior Axle Clips.....66⅔&5@70%
Norway Spring Bar Clips, 5-16..60&5&5%
Wrought-Iron Felloe Clips.....₩ ℔, 5½¢
Steel Felloe Clips.....₩ ℔, 5¢
Baker Axle Clips.....25%

Cloth and Netting, Wire—See Wire, &c.

Cockeyes.....50%

Cocks, Brass.

Hardware list.....50&2%

Coffee Mills—See Mills, Coffee.

Collars, Dog, &c.

Medford Fancy Goods Co.....40&10%
Embossed, Gilt, Pope & Steven's list 30&10%
Leather, Pope & Steven's list.....40%
Brass, Pope & Steven's list.....40%
Chapman Mfg. Company.....50&10@60%

Combs, Curry.

Fitch's.....50&10@50&10&10%
Rubber, per doz $10.00.....20%
Perfect.....50%

Compasses, Dividers, &c.—

Compasses, Calipers, Dividers.70@70&10%
Bemis & Call Co.'s
Dividers.....60&5%
Compasses & Calipers.....50&5%
Wing and Inside or Outside.....50&5%
Double.....60%
(Call's Pat. Inside).....30%
Excelsior.....50%
J. Stevens & Co.'s.....25&10%
Starrett's
Spring Calipers and Dividers....25&10%
Lock Calipers and Dividers.....25%
Combination Dividers.....25%

Coopers' Tools—See Tools, Coopers'.

Cord—

Sash.

Common.....₩ ℔ 10@11¢
Patent, good quality.....₩ ℔ 13@13½¢
White Cotton Braided, fair...₩ ℔ 28@29¢
Common Russia Sash.....₩ ℔ 13½¢
Patent " " .....₩ ℔ 15¢
Cable Laid Italian Sash.....₩ ℔ 22@23¢
Indian Cable Laid " ... .₩ ℔ 13¢
Silver Lake—
A Quality, White, 50¢.....10&10&5%
A Quality, Drab, 55¢.....10&10&5%
B Quality, White, 50¢.....28&30%
B Quality, Drab, 55¢.....31@33%
C Quality, White (only).....26@27¢
Sylvan Spring, Extra Braided, White, 34¢
Sylvan Spring, Extra Braided, Drab..39¢
Semper Idem, Braided, White.....30¢
Egyptian, India Hemp, Braided.....25¢
Samson—
Braided, White Cotton, 50¢...30@30&5%
Braided, Drab Cotton, 55¢....30@30&5%
Braided, Italian Hemp, 55¢...30@30&5%
Braided, Linen, 80¢.....30@30&5%

Wire Picture.

Braided or Twisted.....75@75&10%

Corkscrews—See Screws, Cork.

Corn Knives and Cutters—See Knives, Corn.

Crackers, Nut—

Table (H. & B. Mfg. Co.).....40%
Blake's Pattern.....₩ doz $2.00, 10%
Turner & Seymour Mfg. Co.....50%

Cradles—

Grain.....50&5&2@50&10&2%

Crayons.

White Crayons, ₩ gr, 12¢@12½¢.....10%
D. M. Stewart Mfg. Co., Metal Workers, ₩ gr, $2.50.....25%
D. M. Stewart Mfg. Co., Rolling Mill, ₩ gr, $2.50.....25%
See also Chalk.

Crow Bars—See Bars, Crow.

Curry Combs—See Combs, Curry.

Curtain Pins—See Pins, Curtain.

Cutters—

Meat.

Dixon's ₩ doz.....40&5%

Nos.	1	2	3	4
	$14.00	$17.00	$19.00	$30.00

Woodruff's ₩ doz.....40&5%

Nos.		100	150
		$15.00	$18.00

Hales Pattern ₩ doz.....70@70&5%

Nos.	11	12	13
	$27.00	$33.00	$45.00

American.....30%

Nos.	1	2	3	4	B	5
Each	$5	$7	$10	$25	$50	$60

Enterprise.....30%

Nos.	10	12	22	32	42
Each	$3	$2.50	$4	$6	$15

Great American Meat Cutter.....30%

Nos.	112	116	118	120	122
Each	$2.00	$2.75	$3.00	$2.50	$4.00

Miles' Challenge ₩ doz.....45@45&10%

Nos.	1	2	3
	$22.00	$30.00	$40.00

Home No. 1.....₩ doz, $26.00, 55&10%
Draw Cut, each:

Nos.	5	2	6	8
	$50	$75	$80	$225

.....20@25%
Great American.....30%
Beef Shavers (Enterprise).....20&10@30%
Little Giant.....50%
Chadborn's Smoked Beef Cutter, ₩ doz $66.00

Tobacco.

Champion.....20&10@30%
Wood Bottom.....₩ doz $5.00@$5.25
All Iron.....₩ doz $4.25
Nashua Lock Co.'s..₩ doz, $18.00 50@55%
Wilson's.....55%
Sargenta's.....₩ doz, $24, 55&10%
Acme.....₩ doz $20.00, 40%

Washer.

Smith's Pat.....₩ doz $12.00, 20&10&10%
Johnson's.....₩ doz $11.00, 33⅓%
Penny's.₩ doz Pol. $14; Jap'd, $16.00, 55%
Appleton's.....₩ doz $16.00, 60&10%
Bonney's.....30&10%
Cincinnati.....25&10%

Cutlery—

Pocket and Table.....Net prices
Wostenholm.. ..New list in preparation

Dampers, &c—

Dampers, Buffalo.....40&10%
Buffalo Damper Clips.....40&10%
Crown Damper.....40%
Excelsior.....40&10%

Diggers, Post Hole, &c.—

Samson Post Hole Digger, ₩ doz $36.00, 25%
Fletcher Post Hole Augers, ₩ doz $36, 20%
Eureka Diggers.....₩ doz $12.50@14.00
Leed's.....₩ doz $8.00@9.00
Vaughan's Post Hole Auger, ₩ doz $13.00@14.00
Kohler's Little Giant.....₩ doz. $18.00
Kohler's Hercules.....₩ doz. 15.00
Kohler' New Champion.....₩ doz. $9.00
Schniedler.....₩ doz. $18.00
Ryan's Post Hole Diggers..₩ doz $24.00
Cronk's Post Bars, ₩ doz $60.00, 50&5@50&10%
Gibbs Post Hole Digger, ₩ doz $30.00, 50¢
Imperial, ₩ doz $15.....45%

Dividers—

See Compasses.

Dog Collars—See Collars, Dog, &c.

Door Springs—See Springs, Door.

Drawers.

Money, ₩ doz.....$18&$20

Drawing Knives—See Knives, Drawing.

Drills and Drill Stocks—

Blacksmiths'.....each $1.75
Blacksmiths' Self-Feeding, each $7.50,20%
Breast, P. S. & W.....40&10%
Breast, Wilson's.....30&5%
Breast, Millers Falls.....each $3.00, 25%
Breast, Bartholomew's....each $2.50, 25&10&40%
Ratchet, Merrill's.....20@20&5%
Ratchet, Ingersoll's.....25%
Ratchet, Parker's.....20@20&5
Ratchet, Whitney's.....20&10%
Retchet, Weston's.....20@25%
Ratchet, Moore's Triple Action..25@30%
Ratchet, Curtis & Curtis.....30%
Whitney's Hand Drill, Plain, $11.00; Adjustable, $12.00.....20&10%
Wilson's Drill Stocks.....10%
Automatic Boring Tools....$1.75@$1.85

Twist Drills—

Morse.....50&10&5%
Standard.....50&10@5%
Syracuse (Metal list).....50&10%
Cleveland.....50&10&5%
Williams.....50&10&10%
New Process.....50&10&5%

Drill Bits.—See Augers and Bits.

Drill Chucks.—See Chucks.

Dripping Pans-See Pans, Dripping.

Drivers, Screw.

Douglas Mfg. Co.....20@20&10%
Disston's.....10%
Buck Bros.....30%
Stanley R. & L. Co.'s
Varnished Handles.....65&10%
Black Handles.....60&10%
Sargent & Co.'s
No. 1 Forged Blade.....60&10&10%
Nos. 20, 30 and 60.....66⅔&10&10%
P. S. & W.....70 %
Knapp & Cowles:
No. 1.....60&20@70%
No. 2.....60&10&10@70&5%
No. 3.....60&5@60&10%
Nos. 4 and 00, Acme and Ideal..50@ 50&50&10&5%
Stearns'.....25&10&5%
Gay & Parsons.....35%
Champion.....25&10%
Clark's Pat.....30@33⅓%
Crawford's Adjustable.....30%
Ellrich's Socket and Ratchet..25@25&.0%
Allard's Spiral, new list.....25%
Kolb's Common Sense ₩ doz $6.00,25&10%
Syracuse Screw-Driver Bits...30&30&5%
Screw-Driver Bits.....₩ doz. 50@75¢
Screw-Driver Bits, Parr's.....₩ gro $6.25
Fray's Hol. Hdle. Sets. No. 3, $12.00, 25@25&10%
P. D. & Co.'s all Steel.....50%
Cincinnati.....25&10%
Brace Screw Drivers.....25&10%
Buck Bros.' Screw-Driver Bits ....

Egg Beaters.—See Beaters, Egg.

Egg Poachers.—See Poachers, Egg.

Electric Bell Sets.—See Bells, Electric.

Emery. — No. 4 to No. 5½ to Flour, CF

	40 gr.	150 gr.	F. FF.
Kegs, ₩ ℔	4½¢	5 ¢	2½¢
½ kegs, ₩ ℔	4¾¢	5½¢	2¾¢
¼ kegs, ₩ ℔	5 ¢	5¾¢	3 ¢
10-℔ cans, 10 in case	6 ¢	6¾¢	5 ¢
10-℔ cans, less than 10	10 ¢	10 ¢	7½¢

Enameled and Tinned Ware—See Ware, Hollow.

Escutcheon Pins—See Pins, Escutcheon.

Escutcheons.

Door Lock....Same dis as Door Locks.
Brass Thread.....60@60&10%
Wood.....25%

Expanded Metal.

List No. 5.

Lathing.....10%
Fencing, Painted Sheets.....20%
Netting, Painted Sheets.....20%
Door Mats, Galvanized.....25%
Window Guards, Paneled.....15%
Tree Guards, Paneled.....15%

Fasteners, Blind—

Mackrell's, ₩ doz. $1.00.....20@20&10%
Van Sand's Screw Pat., $15 ₩ gr..60&10%
Van Sand's Old Pat., $15.00 ₩ gr..55&10%
Washburn's Old Pattern, ₩ gr.....$9.00
Merriman's.....new list
Austin & Eddy No. 2008 ₩ gr.....$9.00
Security Gravity, ₩ gr.....$9.00

Faucets.—

Fenn's.....40%
Bohren's Pat. Rubber Ball.....25%
Fenn's Cork Stops.....33⅓%
Star.....60%
Frary's Pat. Petroleum.....40&5&2%
B. & L. B. Co.
West's Lock, Open and Shut Key...50%
Star, Metal Plug, new list.....40%
Lockport, Metal Plug, reduced list..60%
Metallic Key, Leather Lined....60&10@ 60&10&10%
Cork Lined.....70&5@70&10%
Burnside's Red Cedar.....50%
Burnside's Red Cedar, bbl lots....50&10%
John Sommers'
Peerless Best Block Tin Key.....40%
IXL, 1st quality, Cork Lined.....50%
Diamond Lock.....40%
Perfection, Fla. Red Cedar.....50%
Goodenough Cedar.....50%
Boss Metallic Key.....50%
Reliable Cork Lined.....60%
Western Pattern Cork Lined.....50%
Self-Measuring
Enterprise, ₩ doz $50.00.....20&10%
Lane's, ₩ doz $36.00.....25&10%
Victor, ₩ doz $36.00.....25&10%

Felloe Plates—See Plates, Felloe.

Fifth Wheels.—

Derby and Cincinnati.....45&5%
Brewster.....50&5%

Files—

Domestic—

Nicholson Files, Rasps, &c.....60&10&60&10&5%
Nicholson (N. F.) Files.....25%
Nicholson's Royal Files (Seconds).....75% (extra prices on certain sizes)
Other makers, best brands60&10@50&20%
Fair brands.....60&10&10@70&5%
Second quality.....70&10@75&10%
Nicholson's Horse Rasps....60&10@60& 10&5%
Heller's Horse Rasps.....50&7½@50&10%
McCaffrey's Horse Rasps.....50&10%
Chelsea Horse Rasps, Hand Cut...50&10%

Imported—

Moss & Gamble....List, April 1, 1883, 15%
Butcher.....Butcher's list, 20%
Stubs.....Stubs list, 25@30%
Turton's.....Turton's list, 20@25%
Greaves' Horse Rasps..American list, 60%

Fixtures.

Grindstone—

Sargent's Patent.....70&10%
Reading Hardware Co.....30&10%
P., S. & W. Co.....50&10%

Fluting Machines—See Machines, Fluting.

Fluting Scissors—See Scissors, Fluting.

Fodder Squeezers—See Squeezers, Fodder.

Forks—

Hay, Manure, &c., Asso List.65&5@65&10%
Hay, Manure, &c., Phila. List 60@60&5%
Plated, see Spoons.

Frames—

Saw—

White Vermont.....₩ gro $0.00@10.00
Red, Polished and Varnished.....₩ doz $1.50, 25%

Screen, Window and Door—

Porter's Pat. Window and Door Frame. 33⅓&10%
Warner's Screen Corner Irons..33⅓@ 33⅓&10%
Stearns' Frames and Corners..25@25&10%

Freezers, Ice Cream—

White Mountain.....60@60&5%
Granite State.....65@65&5%
Arctic.....70@70&5%
American.....60%
Buffalo Champion.....65@65&[illegible]
Shepard's Lightning.....65@65&[illegible]
Gem.....65%
Blizzard.....70%
Double Action Crown.....60%
Crown.....60%
Star.....60%
Peerless and Giant.....60&10%
Zero and Pet.....65&10%
Boss.....65&10&10%
Keystone, P. D. & Co., each, $1.50.....20%

Fruit and Jelly Presses—See Presses, Fruit and Jelly.

Fry Pans—See Pans, Fry.

Funnels.

Gersdorff's Perfection, Standard and Globe; *Tin*, 1 gro., 10%; 2 to 5 gro., 20%; 5 to 10 gro.....30%
Copper, 1 to 6 doz., 15%; 6 to 12 doz., 20%; over 12 doz.....25%

Fuse— ₩ 1000 ft

Common Hemp Fuse, for dry ground.$2.70
Common Cotton Fuse, for dry ground 2.85
Single Taped Fuse, for wet ground.. 3.85
Double Taped Fuse, for very wet gr. 4.85
Triple Taped Fuse, for very wet gr.. 5.60
Small Gutta Percha Fuse, for water. 7.50
Large Gutta Percha Fuse, for water.12.00

Gates, Molasses—

Stebbin's Pattern.....75&10&5@80%
Stebbin's Genuine.....60&10&10%
Stebbin's Tinned Ends.....40&10%
Chase's Hard Metal.....50&10%
Bush's.....20%
Lincoln's Pattern.....70@70&10%
Weed's.....20&10%
Boss, ₩ doz:
No. 1, $7; No. 2, $8; No. 3, $9; No. 4, $10.....60&10&10%

Gauges.

Marking, Mortise, &c.....60&10%
Starrett's Surface, Center and Scratch. 25&10%
Wire, low list.....10&10%
Wire, Wheeler, Madden & Co.....10%
Wire, Morse's.....25%
Wire, Brown & Sharpe's.....10@20%
Wire, P. S. & W. Co.....10&10%

Gimlets—

Nail and Spike.....50&10&5%
" Eureka " Gimlets.....40&10%
" Diamond " Gimlets.....₩ gr $5.00
Double Cut, Shepardson's.....45@45&5%
Double Cut, Ives'.....60@60&5%
Double Cut, Douglass'.....40&10%
" Bee," ₩ gr $12.....25@25&5%

Glue—

Le Page's Liquid.....25@25&5%
Upton's Liquid.....35%
The Le Page Co.'s Improved Process 25@25&5%

Glue Pots—See Pots, Glue.

Grease, Axle.

Fraser's.....Keg ₩ ℔ 4¢, Pail ₩ ℔ 5¢
Fraser's, in boxes.....₩ gr $9.50
Dixon's Everlasting, in bxs..₩ doz 1 ℔ $1.20; 2 ℔ $2.00
Dixon's Everlasting....10-℔ pails, ea. 35¢
Lower grades, special brands, ₩ gr $5.50@$7.00

Grindstones—

Small, at factory.....₩ ton $7.50@9.00

Grindstone Fixtures—See Fixtures, Grindstone.

Hack Saws—See Saws.

Hafts, Awl.

Sewing, Brass Fer. ₩ gr, $3.50.....45&10%
Pat. Sewing, Short. $1.00 ₩ doz.....40&10%
Pat. Sewing, Long.....₩ doz $1.20
Pat. Peg, Plain Top. ₩ gr $10.00....45&10%
Pat. Peg, Leather Top. ₩ gr $12.00.45&10%

Halters.

Covert's, Rope, ½-in. Jute..... 50&2%
Covert's, Rope, ½-in. Hemp.....50&2%
Covert's Adj. Rope Halters.....40&2%
Covert's Hemp Horse and Cattle Tie, 50&2%
Covert's Jute Horse and Cattle Ties, 60&10&2%
Covert's Adj. Web Halters.....35&2%

Hammers—

Handled Hammers—

Maydole's, list Dec. 1, '85.....25&10@35%
Buffalo Hammer Co.
Humason & Beckley
Atha Tool Co.
Fayette R. Plumb
C. Hammond & Son
Verree.....50@50&10%
Hartford, Nail Hammers...35&10@40&5%
Hartford, Machinists, &c.....50@50&10%
Magnetic Tack, Nos. 1, 2, 3, $1.25, 1.50 & 1.75.....30&10%
Nelson Tool Works.....40&10%
Warner & Nobles.....20@25
Peck, Stow & Wilcox.....40%
Sargent's.....33⅓&10%

Heavy Hammers and Sledges—

3 ℔ and under.....₩ ℔ 40¢
3 to 5 ℔.....₩ ℔ 36¢ } 70@70&10%
Over 5 ℔.....₩ ℔ 30¢
Wilkinson's Smiths.....10½¢@11¢₩ ℔

Handcuffs and Leg Irons—See Police Goods,

Handles—

Atkins' No. 1 Loop, ₩ pair, 28¢; No. 13¢; No. 6, 16¢; No. 2 and No. Reversible, 18¢.

Cross-Cut Saw Handles—

Boynton's Loop Saw Handles, 50¢....60%
Champion.....15%

Iron, Wrought or Cast—

Door or Thumb.

Nos.	0	1	°	°
Per doz.	$0.90	1.00	1.15	1.35 1.50

60&10&10

Roggin's Latches.....₱ doz 30¢@35¢
Bronze Iron Drop Latches..₱ doz 70¢ net
Jap'd Store Door Handles—Nuts, $1.62; Plate, $1.10; no Plate, $0.88 ..... net
Barn Door, ₱ doz $1.40..... 10&10%
Chest and Lifting..... 70%

Wood—

Saw and Plane.....40&10@40&10&5%
Hammer, Hatchet, Axe, Sledge, &c...40%
Brad Awl.....₱ gr $2.00
Hickory Firmer Chisel, ass'd. ₱ gr 4.50
Hickory Firmer Chisel, large. ₱ gr 5.00
Apple Firmer Chisel, ass'd... ₱ gr 5.00
Apple Firmer Chisel, large...₱ gr 6.00
Socket Firmer Chisel, ass'd...₱ gr 8.00
Socket Framing Chisel, ass'd. ₱ gr 5.00
J. S. Smith & Co.'s Pat File..... 50%
File, assorted..... ₱ gr 2 75 } 40@
Auger, assorted.....₱ r 5.00 } 40&10%
Auger, large..... ₱ gr 7.00 }
Pat. Auger, Ives'..... ..30&10%
Pat. Auger, Douglass..... ₱ set $1.25
Pat. Auger, Swan's..... .....₱ set $1.00
Hoe, Rake, Shovel, &c. ....50&10%

Hangers—

Barn Door, old patterns...60&10&10@70%
Barn Door, New England...60&10&10@70
Samson Steel Anti-Friction.....55%
Orleans Steel.....55%
Hamilton Wrought Wood Track.....55%
U. S. Wood Track 65%
Champion.....60&10%
Rider and Wooster, Medina Mfg. Co.'s list.....70%
Climax Anti-Friction.....55%
Climax Anti-Friction for Wood Track55%
Zenith for Wood Track.....55%
Reed's Steel Arm.....50%
Challenge, Barn Door.....50%
Sterling's Imp'ved (Anti-Friction).65&10%
Victor, No. 1, $15.00;; No. 2, $16.50; No. 3, $18.00.....50&2%
Cheritree.....50&10%
Kidder's.....50&10@60%
The Boss.....60&10%
Best Anti-Friction.....60&10%
Duplex (Wood Track).....60&10&5%
Terry's Pat., ₱ doz pr. 4 in, $10.00; 5 in. $12.00.....50&10%
Terry's Steel Anti-Friction Leader 50&10%
Terry's Steel Anti-Friction Ideal..50&10%
Cronk's Patent, Steel Covered.....50&5%
Wood Track Iron Clad, ₱ ft. 10¢.....50 &15@80%
Carrier Steel Anti-Friction.....50&10%
Architect, ₱ set $6.00..... 20%
Eclipse.....20&10%
Felix, ₱ set $4.50..... 20%
Richards'.....30@30&10%
Lane's Standard.....50&5@50&10%
Lane's New Standard.....50@50&5%
Ball Bearing Door Hanger..20&10@25&10%
Warner's Pat.....20&10@20&10&10%
Stearns' Anti-Friction.20&10@20&10&10%
Stearns' Challenge.....25&10@25&10&10%
Faultless.....40@40&5%
American, ₱ set $6.00..... 20&10%
Rider & Wooster, No. 1, 62½¢; No. 2, 75¢..... 40%
Paragon, Nos. 1, 2 and 3 .....40&10%
Cincinnati.....25&10%
Paragon, Nos. 5, 5½, 7 and 8.....20&10%
Crescent.....60@60&10%
Nickel Cast Iron..... 50%
Nickel, Malleable Iron and Steel 40%
Scranton Anti-Friction Single Strap33⅓%
Wild West, 4 in. Wheel, $15.00; 5 in. Wheel, $21.00..... 45%
Star .....40&10@40&10&5%
May .....50&5@50&10%
Rarre, $6.00..... .40&10%
Interstate..... 50%
Magic..... 45%

Harness Snaps—See Snaps.

Hatchets—

American Axe and Tool Co.
Blood's.....
Hunt's.....
Hurd's.....
Mann's.....
Peck's.....
Underhill's..... } 40 & 10 @ 50&5 %
Buffalo Hammer Co.....
Fayette R. Plumb.....
C. Hammond & Son.....
Kelly's.....
Sargent & Co.....
P., S. & W. Co.....
Ten Eyck Edge Tool Co.....
Collins.....10%
Schulte, Lohoff & Co.....50@50&5%

Hay and Straw Knives—See Knives.

Hinges—

Blind Hinges—

Parker.....75&2%
Palmer.....50&5&10%
Seymour .....70&2%
Huffer 50%
Clark's, Nos. 1, 3, 5, 40 and 50 75&10&5@80%
Clark's Mortise Gravity.....50%
Sargent's, Nos. 1, 3, 5, 11, 13 75&10@55&10&5%
Sargent's, No. 12.....77&10&10%
Reading's Gravity.....75&10@75&10&5%
Shepard's
Noiseless.....75&10%
Niagara.....80%
Buffalo.....80%
Clark's Genuine Pattern.....80%
O. S., Lull & Porter.....75&10%
Acme, Lull & Porter.....75%
Queen City Reversible. ..70&10&5@75%
Clark's Lull & Porter, Nos. 0, 1, 1½, 2, 2½, 3.....75&10&2½%
North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50. .....10%

Gate Hinges—

Western.....₱ doz $4.40, 60%
N. E.....₱ doz $7.00, 55%
N. E. Reversible.....₱ doz $5.20, 55&10%
Clark's, Nos. 1, 2, 3.....60&10&5%
N. Y. State.....₱ doz $5.00, 55&10%
Automatic .....₱ doz $12.50, 50%
Common Sense.....₱ doz pair $4.50, 50%
Seymour's..... 45&10%
Shepard's .....60&10&5%
Reed's Latch and Hinges. ₱ doz $12.00, 50%

Spring Hinges—

Union Spring and Blank Butts.....40%
Gear's Spring Hinge Co.'s list, March 1886 ....20%

Acme.....80%
J. S. .....25&10%
Empire and Crown.....20%
Hero and Monarch 55%
American, Gem, and Star.....20%
Oxford 20%
Barker's Double Acting..... .... 25%
Union Mfg. Co.....25%
Bommer's.....30%
Suckman's.....15@20%
Chicago.....30%
Wiles'.....10%
Devore's.....40%
Rex.....40%
Royal.....60%
Reliable.....60%
Champion.....60%
Bardsley's Patent.....40%
Stearn's.....50&10%
Niagara, Holdback pattern, per gross, ...$14.00

Wrought Iron Hinges

Strap and T.....75&10%
Screw Hook and Strap. { 6 to 12 in., ₱ ℔ .4 2-10¢ / 14 to 20 in., ₱ ℔ .3 7-10¢ / 22 to 36 in., ₱ ℔ .3 2-10¢ }
Heavy Welded Hook. { 6 to 12 in., ₱ ℔ .4 2-10¢ / 14 to 20 in., ₱ ℔ .3 7-10¢ / 22 to 36 in., ₱ ℔ .3 2-10¢ }
Screw Hook and Eye { ⅛ in., ₱ doz $1.50 / ⅝ in., ₱ doz $2.45 / ¾ in., ₱ doz $3.80 } 10%
Rolled Blind Hinges, Nos. 32 and 34 55&10%
Rolled Blind Hinges, Nos. 232 and 234 55&10%
Rolled Plate.....70&10%
Rolled Raised.....70&10%
Plate Hinges { 8, 10 & 12 in., ₱ ℔ ....5¢ / "Providence" { over 12 in., ₱ ℔ ....4¢

Hoes—

Eye—

D. & H. Scovil.....20%
Lane's Crescent Planters Pattern..45&5%
Lane's Razor Blade, Scovil Pattern...30%
Maynard, S. & O. Pat.....45&5%
Sandusky Tool Co., S. & O. Pat. .....50&10&5
Am. Axe and Tool Co., S. & O. Pat..... @60%
Chattanooga Tool Co., S. & O. Pat..60& 5@60&10%
Grub..... .....60&10%

Handled—

Garden, Mortar, &c.....65&5@65&10%
Planter's, Cotton &c.....65&5@65&10%
Warren Hoe.....60%
Magic ....₱ doz $4.00

Hog Rings and Ringers—See Rings and Ringers.

Hoisting Apparatus—See Machines, Hoisting.

Hollow-Ware—See Ware, Hollow.

Holders.

Bag.

Sprengle's Pat.....₱ doz $18.....60%

Bit.

Extension, Barber's, ₱ doz $15.00.....40@40&10%
Ives, ₱ doz $20.00..... .60&5@60&10%
Diagonal..... ₱ doz $24.00, 40%
Angular..... ₱ doz $24.00, 40&5%

File and Tool—

Bals Pat.....₱ doz $4.00; 25%
Nicholson File Holders..... 20%
Dick's Tool Holder..... 20%

Hooks—

Cast Iron—

Bird Cage, Sargent's list.....
Bird Cage, Reading..... } 60&10&10%
Clothes Line, Sargent's list..}
Clothes Line, Reading list. 60&10@60&10&10%
Ceiling Sargent's list.....55&10&10%
Harness, Reading list..55&10@55&10&10%
Coat and Hat, Sargent's list. 55&10@60&10%
Coat and Hat, Reading .50&10@50&10&10%

Wrought Iron—

Cotton.....₱ doz $1.25
Cotton Pat. (N.Y. Mallet & Handle W'ks). 30%
Tassel and Picture (T. & S. Mfg. Co.)...50%
Wrought Staples, Hooks, &c. See Wrought Goods.

Wire—

Wire Coat and Hat, Gem, list April, 1886..... 50%
Wire Coat and Hat, Miles', list April, 1886..... 50%
Indestructible Coat and Hat.....45%
Wire Coat and Hat, Standard.....60%
Handy Hat and Coat.....50&10%
Steady Ceiling Hooks.....50&10%
Belt. .....80@80&10%
Atlas, Coat and Hat.....60%

Miscellaneous.

Grass, No. 2, $2.00; No. 3, $2.25; No. 4, $2.50
Nolin's Grass.....₱ doz $2.25
Bush .....55@60%
Whiffletree—Patent.....55%
Hooks and Eyes—Malleable Iron. 70@70&10%
Hooks and Eyes—Brass.....60&10&10%
Fish Hooks, American..... 50%
Bench Hooks .....See Bench Stops.

Horse Nails—See Nails, Horse.

Horse Shoes—See Shoes, Horse.

Hose, Rubber—

Competition.....75@75&5%
Standard.....60&10&5@60&10&10%
Extra..... 50&10@60%
N. Y. B. & P. Co., Para..... .....25&5%
N. Y. B. & P. Co., Extra..... ..40@40&5%
N. Y. B. & P. Co., Dundee... 50&10 @ 60%

Huskers—

Blair's Adjustable..... ..₱ gr $8.00
Blair's Adjustable Clipper.. ..₱ gr 7.00
Hubbard's Solid Steel..... ₱ gr 4.50

Indurated Fiber-Ware—See Ware, Indurated Fiber.—

Irons.

Sad—

From 4 to 10, at factory ...₱ 100 ℔, $2.30@$2.40
Self-Heating.....₱ doz $9.00 net
Self-Heating, Tailors'....₱ doz $18.00 net
Mrs. Pott's Irons..... .....50&5%
Enterprise Star Irons..... .....50&5%
Cold Handle Sad Irons..... .....30&5%
Ideal Irons new list.50&10@50 & 10&10%
Salamander, Irons..... .....25%
B. B. Sad Irons, ₱ ℔.....3 @3¼¢
Combined Fluter and Sad Iron, ₱ doz, $15.00.....15%
Fox Reversible, Self-Fluter ₱ doz $24.00
Chinese Laundry (N.E. Butt Co.) 8½¢, 15%
New England..... 5¢, 15%
Mahony's Troy Pol. Irons.....25%
Sensible..... .....20@20&5%
National Self-Heating.....30%

Soldering—

Soldering Coppers..... ₱ ℔ 22 @ 23¢
Covert's Adjustable, list Jan. 1, 1886. 85&2%

Irons, Pinking, per dos., 65¢.

Jack Screws—See Screws.

Jacks, Wagon.

Daisy..... .....33⅓%
Victor..... .....33⅓%

Kettles—

	Spun.	Stamped.
Brass, 7 to 17 in., ₱ ℔....	24¢	22 ¢
Brass larger than 17 in., ₱ ℔	26¢	24½¢

Enameled and Tea—See Hollow Ware.

Keys—

Lock Asso'n list Dec. 30, 1886...50&10@60&5%
Eagle, Cabinet, &c.....33⅓&2%
Hotchkiss' Brass Blanks.....40%
Hotchkiss, Copper and Tinned.....40%
Hotchkiss' Pat. and Cab.....35%
Ratchet Bed Keys.....₱ doz $4.00, 15%
Wollensak Tinned.....50&10%

Knife Sharpeners—See Sharpeners, Knife.

Knives.

Butcher, Shoe, &c—

Wilson's Butcher Knives, 1st Oct. 1, 1890 .....25%
Ames' Butcher Knives 25%
Foster Bros.' Butcher, &c..... ..40%
Nichols' Butcher Knives.....40&10%
Ames' Shoe Knives.....20@25%
Ames' Bread Knives. ₱ doz $1.50, 15@20%
Moran's Shoe and Bread.....20%
Hay and Straw.....See Hay Knives.
Table and Pocket.....See Cutlery.
Corn, Auburn Mfg. Co. Western Pat., $2.00
Corn, Auburn Mfg. Co. Crescent.....$3.50

Corn—

Bradley's..... .....10%
Wadsworth's..... .. ..25%

Drawing—

Witherby, P. S. & W, Mix, New Haven..... } ..75 @ 75&10 %
Merrill .....60&10@60&10&5%
Douglas.....75@75&5%
Watrous.....15&10@25%
L. & J. White.....20&5%
Bradley's.....35%
Adjustable Handle.....25@33⅓%
Wilkinson's Folding.....25@25&5%

Hay and Straw—

Lightning, Mfrs', price ₱ doz $18.00, 25% But jobbers cut this price freely, often selling at $8 @ $8.50.
Wadsworth's..... .40@7½@40&10%
Carter's Needle.....₱ doz $11.00@$11.50
Heath's..... ₱ doz $13.00@13.50
Auburn Hay, Com. and Spear Point. .50%
Auburn, Straw..... .40%
Nolin's Hay.....₱ doz.$7.00 @ $8.00

Mincing.

Am. (2d quality), ₱ gr., 1 blade, $7; 2 blades, $12; 3 blades, $18.....net
Lothrop's..... .....20&10%
Smith's, ₱ doz, Single, $2.00; Double, $3. 40@45%
Knapp & Cowles.....50&10@60%
Buffalo Adjustable..... ₱ doz $3.00 .25%
Buffalo Double Adj'table. ₱ doz $3.00 25%

Knobs—

Door Mineral..... .....60@65%
Door Por. Jap'd..... .....70@75%
Door Por. Nickel..... .....$2.00@2.25
Door Por. Plated, Nickel..... .....$2.00@2.25
Drawer, Porcelain.....60&10@60&10&10%
Hemacite Door Knobs.....40&10@50%
Yale & Towne Wood, list Dec., 1885...40%
Furniture Plain.....75¢ gro inch, 10%
Furniture, Wood Screws.....25&10%
Base, Rubber Tip.....70&10&5%
Picture, Judd's.....60&10&10@70%
Picture, Sargent's..... .....70&10%
Picture, Hemacite..... .....35&5%
Shutter, Porcelain..... .....65&10%
Carriage, Jap.....₱ gro 80¢, 60&10%
Bardsley's Wood Door, Shutter, &c. .40%

Ladies'—Melting, Sargent's.....55&10%
Melting, Reading. .....35&10%
Melting, Monroe's Pat...₱ doz $4.00, 40%
Melting, P. S. & W. .....35&10@40%
Melting, Warner's..... .....30%

Lanterns—

Tubular—

Plain with Guards, ₱ doz.....$4.00@4.25
Lift Wire, with Guards.....$4.50@4.75
Square Plain, with Guards....$4.00@4.25
Sq. Lift Wire, with Guards....$4.25@4.50
Without Guards, 25¢ ₱ doz less.

Miscellaneous.

Police, Small, $6.00; Medium, $7.25; Large, $9.75..... .....20@25%

Lawn Mowers—See Mowers, Lawn.

Leaders, Cattle.

Humason. Beckley & Co.'s.....70%
Sargent's..... .....60%&10%
Hotchkiss..... .....30%
Peck, Stow & W. Co..... ...60&10%

Lemon Squeezers—See Squeezers, Lemon.

Lifters, Transom.

Wollensak's:
Class 3 and 4, Bronzed Iron.....50%
Class 3 and 4, Bronze Metal.....25%
Class 3 and 4, Brass..... .....35%
Skylight Lifters..... .....35%
Crown, Eagle and Shield..... .....50%
Reiher's, list Sept. 1, 1890.
Bronzed Iron Rods.....50&10&10&2%
Brass, Real Bronze or Nickel Plate..30%
Excelsior.....50&10&2%
Shaw's..... .....50&10%
Payson's:
Universal..... .....60%
Solid Grip..... .....60%
Imperial..... .....50&10%

Lines—

Cotton and Linen Fish, Draper's.....50%
Draper's Chalk..... .....60%
Draper's Masons' Linen, 84 ft., No. 1, $1.25; No. 2, $1.75; No. 3, $2.25; No. 4, $2.75; No. 5, $3.25..... .....25%
Cotton Chalk..... .....55%
Samson, Cotton, No. 4, $2; No. 4½, $2.50 10%
Silver Lake, Braided, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50 ₱ gro..... .....25%
Mason's Linen, No. 3½, $1.50; No. 4, $2.00; No. 4½, $2.50.
Mason's Colored Cotton..... .....45%
Wire Clothes.. Nos. 12 16 20
100 ft. $4 00 $3 50 $3.00
Ventilator Cord, Samson Braided, White or Drab Cotton..₱ doz $7.50, 20%

Locks, &c.—

Cabinet—

Eagle, Gaylord Parker and Corbin... } List March, '84, rev Jan. 1, '85..33⅓&2%
Deitz, Nos. 36 to 39..... .....40%
Deitz, Nos. 51 to 63..... .....40&10%
Deitz, Nos. 86 to 96..... .....30%
Stoddard Lock Co..... .....30&33⅓%
"Champion" Night Latches..... .....40%
Barnes Mfg. Co..... .....40@40&10%
Eagle and Corbin Trunk..... .....25&2%
"Champion" Cab. and Combin...33⅓%
Yale..... .....net prices
Romer's..... .....25%

Door Locks, Latches, &c.

R. & E. Mfg. Co., list Mar. 20, 1889..... } 65&10@70 Much lower net prices often made.
Mallory, Wheeler & Co., list July, '88..... }
Sargent & Co., list Aug. 1, '88 }
Reading Hardware Co., list Feb. 2, '88..... }
Brittan, Graham & Mathes, list Jan. 1890..... .....60&10&10%
Perkins' Burglar Proof..... .....60&25%
Plate..... .....33⅓&2%
Barnes Mfg. Co..... .....40@40&10%
Yale..... .....net prices
Deitz Flat Key..... .....40%
L. & C. Round Key Latches..... .....30&10%
L. & C. Flat Key Latches..... .....33⅓&10%
Romer's Night Latches..... .....15%
Shepardson or U. S..... .....35%
Seed's N. Y. Hasp Lock..... .....25%

Padlocks—

List Dec. 23, '84..... .....75&10%
Brittan, Graham & Mathes..... .....75&10%
Yale Lock Mfg. Co.'s..... .....net prices
Eagle..... .....25&2%
Eureka, Eagle Lock Co..... .....40&2%
Romer's, Nos. 0 to 91..... .....30%
Romer's Scandinavian, &c., Nos. 100 to 505..15%
A. E. Deitz..... .....40%
Champon Padlocks..... .....40%
Hotchkiss..... .....30%
Star..... .....45%
Horseshoe.....₱ doz, $9, 40@40&10%
Barnes Mfg. Co..... .....40@40&10%
Nock's..... .....30%
Brown's Pat..... .....25%
Scandinavian..... .....90@90&10%
E. T. Fraim's Keystone Scandavian: Nos. 119, 120, 130 and 140..... ....90&10% Other Nos..... .....65%
Ames Sword Co. up to No. 150..... .....40%
Ames Sword Co. above No. 150..... .....50%
Slaymaker Barry & Co.
No. 41 line..... .....45&5%
No. 31 line..... .....60&5%
No. 21 line..... .....75@5%

Sash, &c.

Clark's, No. 1, $10; No. 2, $8 ₱ gr. .33⅓%
Fergusson's..... .....33⅓%
Morris and Triumph, list Aug. 16, 1886, 60&2%
Victor..... .....60&10&2%
Walker's..... .....10%
Attwell Mfg. Co..... .....25&33⅓%
Reading..... .....66⅔&10@66⅔&10&10%
Hammond's Window Springs..... .....40%
Common Sense, Jap'd, Cop'd and Br'zed..... ₱ gr $4.00
Common Sense, Nickel Plated ₱ gr $10.00
Universal..... .....30%
Kempshall's Gravity..... .....60%
Kempshall's Model..... .....60@60&10%
Corbin's Daisy, list Feb. 15, 1886.....70%
Payson's Perfect..... .....60@50&10%
Hugunin's Sash Balances..... .....25&5&2%
Hugunin's New Sash Locks..... .....25&5&2%
Stoddard "Practical"..... .....10%
Ives' Patent..... .....60&10@60&10&5%
Liesche's, Nos. 100 and 110, ₱ gr $8; 105, $10.00..... .....20&10%
Davis, Bronze, Barnes Mfg. Co..... 50%
Champion Safety, list March 1, 1888 55@55&5%
Security..... .....70%
Buckeye..... .....₱ gro $4.80

Lumber Tools—See Tools, Lumber

Lustre—

Four-ounce Bottles....₱ doz, $1.75; ₱ gross..... .....$17.00

Machines.

	Without Augers.	Upright.	Angular.
Boring—			
Douglas.....	$5.50	$6.75	50%
Snell's, Rice's Pat.	5.50	6.75	40&10&10%
Jennings	5.50	6.75	45&45&10%
Other Machines...	2.35	2.75.....	
Phillips' Patent with Augers ...	7.00	7.50	

Fluting.

Knox, 4½-inch Rolls .....$3.25 each } 35%
Knox, 6-inch Rolls..... $3.60 each }
Eagle, 3½-inch Roll. $2.15..... .....35%
Eagle, 5½-inch Roll, $2.85..... .....35%
Crown, 4½ in., $3.50; 6 in., $4.00; 8 in., $6.50 each 35%
Crown Jewel, 6 in ....$3.50 each, 35%
American, 5 in., $3.00; 6 in., $3.40; 7 in., $4.50 each..... .....35%
Domestic Fluter ....each, $1.50
Geneva Hand Fluter, White Metal ₱ doz $12, 25%
Crown Hand Fluter, Nos. 1, $15.00; $12.50; 3, $10.00, ...30%
Shepard Hand Fluter, No. 85 ₱ doz 15 30 ....40%

Shepard Hand Fluter, No. 110 ₱ doz $11.00 ..... 40%
Shepard Hand Fluter, No. 95 ₱ doz $8.00 ..... 40%
Clark's Hand Fluter ₱ doz $15.00 ..... 35%
Combined Fluter and Sad Iron, ₱ doz $15.00 ..... 30%
Buffalo ..... ₱ doz $10.00 ..... 10%

Hoisting—
Moore's Hand Hoist, with Lock Brake 20%
Moore's Differential Pulley Block 40%
Energy Mfg. Co's 25%

Washing—
Anthony Wayne, ₱ doz No. 1, $51; No. 2, $45; No. 3, $42

Mallets.
Hickory ..... 20&10@20&10&10%
Lignumvitæ ..... 20&10@20&10&10%
B. & L. Block Co., Hickory & L. V. ..... 30@30&10%

Mattocks. Regular list ..... 60&10%

Measures—
Standard Fiberware, No. 1, peck, ₱ dozen, $4; ½-peck, $3.50.

Meat Cutters—See Cutters, Meat.

Mills.
Coffee—
Box and Side, List Jan. 1, 1888 ..... 60&2%
American, Enterprise Mfg Co. ..... 20&10@30%
The Swift, Lane Bros ..... 20&10%

Mincing Knives — See Knives, Mincing.

Molasses Gates—See Gates, Molasses.

Money Drawers — See Drawers, Money.

Mowers, Lawn.
Leading makers ..... 60@60&10&5%
Other makers ..... 60&10&5@60&10&10%
Pennsylvania 60%
Continental 60%
New Model ..... 60&10&5%
New Quaker City ..... 60&10&5%
Great American ..... 60&10&5%

Muzzles—
Safety ..... ₱ doz, $3.00, 25%

Nails.

Cut and Wire. See Trade Report.
Wire Nails, Papered.
Association list, July 15, '89 ..... 75&10%
Tack Mfrs.' list 70%
Wire Nails, Standard Penny.
Card June 1, '89, base ..... $2.35 @ $2.45
Horse—See Trade Report.

Nos.	6	7	8	9	10
Ausable	.28	.26	.25	.24	.23

40&5&2%

Clinton, Fin.	.19	.17	.16	.15	.14
Essex	.28	.26	.25	.24	.23

30%
25&10@25&10&10%

Lyra	.19	.17	.16	.15	.14

30%

Snowden	.19	.17	.16	.15	.14
Putnam	.23	.21	.20	.19	.18

30%
1000 ℔ in year 15%

Vulcan	.23	.21	.20	.19	.18
Northwest'n	.25	.23	.22	.21	.20

12½&5%
25@25&5%

Globe	.23	.21	.20	.19	.18
Boston	.23	.21	.20	.19	.18

.25&10%
20&5&5&2½%

A. C	.25	.23	.22	.21	.21

25&10@33⅓&5%

C. B.-K	.25	.23	.22	.21	.20

25&10@33⅓&5%

Maud S	.25	.23	.22	.21	.21

40&10&5&2%

Champlain	.28	6	.25	.24	.23

25&1C&10%

New Haven	.28	.26	.25	.24	.23

25&10@25&10&10%

Saranac	.23	.21	.20	.19	.18
Champion	.25	.23	.22	.21	.20

.30&10%
10&10&10%

Capewell	.28	.26	5	.24	.23

35&5@35&10%

Star	.23	.21	.19	.19	.18

10&10@10&12½%

Anchor	.23	.21	.20	.19	.18
Western	.23	.21	.20	.19	.18

.35%
.40&10%

Empire Bronzed ..... 14 ₱ ℔.

Picture
Brass Head, Sargent's list ..... 50&10&10%
Brass Head, Combination list ..... 50&10%
Porcelain Head, Sargent's list. 50&10&10%
Porcelain Head, Combination list. 40&10%
Niles' Patent 40%

Nail Pullers.—See Pullers, Nail.

Nail Sets.—See Sets, Nail.

Nut Crackers.—See Crackers, Nut.

Nuts—
Nuts, off list Dec. 18, 1889: Square. Hex.
Hot Pressed ..... 5.10¢ 5.70¢
Cold Punched ..... 4.80¢ 4.90¢
In packages of 100 ℔, add 1-10¢ ₱ ℔, net; in packages less than 100 ℔, add ½¢ ₱ ℔, net.

Oakum—
Government ..... ₱ ℔ 7@7½¢
U. S. Navy ..... ₱ ℔ @6½¢
Navy ..... ₱ ℔ 5½¢@5½¢

Oilers—
Zinc and Tin ..... 65&10@70%
Brass and Copper ..... 50&10&50&10&5%
Malleable, Hammers' Improved, No. 1, $3.60; No. 2, $4.00; No. 3, $4.40 ₱ doz. 10&10&5%
Malleable, Hammers, Old Pattern, same list 40%
Prior's Pat. or "Paragon" Zinc, 60&10&10%
Prior's Pat. or "Paragon" Brass 50%
Olmstead's Tin and Zinc 60%
Olmstead's Brass and Copper 50%
Broughton's Zinc 60%
Broughton's Brass 50%
Gem P. D. & Co. ..... ₱ gro. $2
Steel, Draper and Williams 50%

Openers, Can.
Messenger's Comet ..... ₱ doz $3.00, 25%
American ..... ₱ gross $3.00
Duplex ..... doz 25¢, 15@20%
Lyman's ..... ₱ doz $3.75, 20%
No. 4 French ..... ₱ doz $2.25, 55@60%
No. 5, Iron Handle ..... ₱ gr $6.00, 45@50%
Eureka ..... ₱ doz $2.50, 10%
Sardine Scissors ..... ₱ doz $2 75@3.00
Star ..... ₱ doz $2.75
Sprague, No. 1, $2.00; 2, $2.25; 3, $2.50 50&10&10%
$2.50; No. 2, $1.50 ... 40%
World's Best, ₱ gross, No. 1, $12.00; No. 2, $24.00; No. 3, $36.00 ..... 50&10%
Universal, ₱ doz $3.00 ..... 55&5%
Domestic, ₱ doz $2.50 ..... 45%
Champion ₱ doz $2.00 ..... 5¢

Packing, Steam—

Rubber—
Standard ..... 60&5@65%
Extra ..... 50&50&5%
N. Y. B. & P. Co., Standard .. 40&10@50%
N. Y. B. & P. Co., Empire ..... 60&5@65%
N. Y. B. & P. Co., Salamander.
₱ ℔ 65¢, 10@15%
Jenkins' Standard. ₱ ℔ 80¢, .. 25@25&5%

Miscellaneous—
American Packing ..... 10¢@11¢ ₱ ℔
Russia Packing ..... 14¢ ₱ ℔
Italian Packing ..... 13¢@14¢ ₱ ℔
Cotton Packing ..... 15¢@17¢ ₱ ℔
Jute ..... 7¢@8¢ ₱ ℔

Padlocks—See Locks.

Pails.
Galvanized Iron—

	Quarts	10	12	14
Hill's Light Weight, ₱ doz.		$2.75	3.00	3.25
Hill's Heavy Weight, ₱ dz.		3.00	3.25	3.75
Helwig's		2.50	2.75	3.00
Sidney Shepard & Co.		2.35	2.85	3.05
Iron Clad		2.50	2.75	3.00
Fire Buckets		2.75	3.25	3.50

Buckets, see Well Buckets.
Indurated Fibre Ware—25%
Star Pails, 12 qt ..... ₱ doz $6.00
Fire, Stable and Milk, 14 qt .. ₱ doz $7.80
Standard Fibre Ware—

	Plain.	Decr'd
Water Pails, 12 qt., per doz.	$4.00	$4.50
Dairy Pails, 14 qt., per doz.	4.50	5.00
Fire Pails, No. 1, 12 qt. per doz	4.50	
Fire Pails, No. 2, 14 qt. per doz	5.00	
Sugar Pails	6.00	6.50
Horse Pails	5.00	
Buggy Pails	4.00	
Slop Jars (bal. trap)	8.00	9.00
Chamber Pails, 14-qt	6.50	7.50

Pans.
Dripping.
Small sizes ..... ₱ ℔ 6¼¢
Large sizes ..... ₱ ℔ 5¾¢
Silver & Co. (Covered) 40%
Fry—
Standard List:

No.	0	1	2	3	4
₱ doz.	$3.00	$3.75	$4.25	$4.75	$5.25
No.	5	6	7	8	
₱ doz.	$6.00	$7.00	$8.00	$9.00	

Polished, regular goods ..... 70&10%
Acme Fry Pans ..... 60&10%

Paper and Cloth—
Sand and Emery—
List April 19, 1886 ..... 50@50&10%
Sibley's Emery and Crocus Cloth 30%

Parers.
Apple.
Advance ..... ₱ doz $4.75
Baldwin ..... ₱ doz 5.25
Bonanza ..... each 5.00
Champion ..... ₱ doz 7.25
Daisy ..... ₱ doz 4.00
Dandy ..... each 7.50
Eureka, 1888 ..... each 16.00
Family Bay State ..... ₱ doz 12.00
Favorite ..... ₱ doz 5.00
Gem ..... ₱ doz 5.25
Gold Medal ..... ₱ doz 4.00
Ideal ..... ₱ doz 4.00
Improved Bay State .. ₱ doz 27.00@30.00
Little Star ..... ₱ doz 4.50
Monarch ..... ₱ doz 13.50
New Lightning ..... ₱ doz 5.50
Oriole ..... ₱ doz 4.00
Penn ..... ₱ doz 4.00
Perfection ..... ₱ doz 4.00
Pomona ..... ₱ doz 4.00
Rocking Table ..... ₱ doz 6.00
Turntable ..... ₱ doz 4.50
Victor ..... ₱ doz 13.50
Waverly ..... ₱ doz 4.00
White Mountain ..... ₱ doz 4.00
72 ..... ₱ doz 4.25
76 ..... ₱ doz 5.75
78 ..... ₱ doz. 6.50
Potato—
White Mountain ..... ₱ doz $4.50
Antrim Combination ..... ₱ doz $5.50
Hoosier ..... ₱ doz $13.50
Saratoga ..... ₱ doz $5.50

Pencils—
Faber's Carpenters' ..... high list 50%
Faber's Round Gilt ..... ₱ gro $5.25
Dixon's Lead ..... ₱ gro $4.50
Dixon's Lumber ..... ₱ gro $6.75
Dixon's Carpenters' ..... 40&10%

Picks—
Railroad or Adze Eye, 5 to 6, $12.00; 6 to 7, $13.00 ..... 60&10%

Picture Nails.—See Nails, Picture.

Pinking Irons.—See Irons, Pinking.

Pins.
Bow—
Humason, Beckley & Co.'s ..... 60&10%
Sargent & Co's .. $17 and $18 ..... 60&10%
Peck, Stow & W Co ... 50&10&50&10&5%
Curtain—
Silvered Glass ..... net
White Enamel ..... net
Escutcheon,
Iron, list Nov. 11, 1885 .. 50&10@50&10&5%
Brass ..... 60@60&5%

Pipe, Wrought Iron—
List September 18, 1889.
1¼ and under, Plain 47½%
1¼ and under, Galvanized 40%
1¼ and over, Plain 60%
1¼ and over, Galvanized 47½%
Boiler Tubes, Iron.
1¼ and under 45%
2-inch and larger 50%

Planes and Plane Irons—
Wood Planes—
Molding ..... 30&2%
Bench, First Quality ..... 45&2%
Bench, Second Quality ..... 50&2%
Bailey's (Stanley R. & L. Co.). ... 40&10%
Iron Planes—
Bailey's (Stanley R. & L. Co.) ..... 40&10@40&10&10%
Miscellaneous Planes (Stanley R. & L. Co.) ..... 20&10@20&10&10%
Victor Planes (Stanley R. & L. Co.). ..... 20&10@20&10&10%
Steer's Iron Planes ..... 35@35&10%
Merrien Mal. Iron Co.'s ..... 40@40&10%
Davis's Iron Planes ..... 40@40&10%
Birmingham Plane Co ..... 50@50&10%
Gage Tool Co.'s Self-Setting .. 20&10&10%
Chaplin's Iron Planes ..... 40@40&10%
Sargent's ..... 30&10@30&10&10%
Standard Tool Co ..... 50@50&5%
Plane Irons—
Butcher's ..... $5.00@$5.25 to 2
Buck Bros 30%
Auburn "Thistle" ..... } 35&2%
Ohio ..... }
Sandusky ..... }
S. & I. J. White 25%

Plates.
Felloe ..... ₱ ℔ 6¢@6½¢

Pliers and Nippers—
Button's Patent ..... 50@50&10%
Hall's No. 2, 5 in., $13.50; No. 4, 7 in. $21.00 ₱ doz ..... 20&10@33⅓%
Humason & Beckley Mfg. Co. .. 50@50&10%
Gas Pliers 60%
Gas Pliers, Custar's Nickel Plated .. 60&5%
Eureka Pliers and Nippers 40%
Russell's Parallel 25%
P. S. & W. Cast Steel 50%
P. S. & W. Tinners' Cutting Nippers, add 6% dis 10%
Carew's Pat. Wire Cutters 20%
Morrill's Parallel, ₱ doz, $12.00 .. 30&5%
Cronk's 8 in., $15.00; 10 in. $21.00, 40@40&5%

Plumbs and Levels—
Regular List ..... 70&10@70&10&10%
Disston's 50%
Pocket Levels ..... 70&10@70&10&10%
Davis Iron Levels 30%
Davis' Inclinometers ..... 10&10%

Poachers.
Egg.
Buffalo Steam Egg Poachers, ₱ doz, No. 1, $6.00; No. 2, $9.00 ..... 25%
Silver & Co., 6-Ring .. ₱ doz $4; 3-Ring $2

Pokes, Animal—
Bishop's I. X. L ..... ₱ doz $6.00
Bishop's O. K ..... ₱ doz $5.25
Bishop's Pioneer ..... ₱ doz $3.75
Bishop's American ..... ₱ doz $2.75
Eagle, Double Stale ..... ₱ doz $5.75
Eagle, Single Stale ..... ₱ doz $3.75
Buckeye, Single Stale ..... ₱ doz $2.75

Police Goods.
R. I. Tool Co., Handcuffs, $15.00 ₱ doz 10%
R. I. Tool Co., Leg Irons, $25.00 ₱ doz 10%
Tower's 25%
Daley's Improved Handcuffs: 2 Hands, Polished, ₱ doz $48.00; Nickeled, $57.00: 3 Hands, Polished, ₱ doz $72.00; Nickeled, $84.00 ..... 25%
J. P. Lovell's Police Goods 25%

Polish, Metal.
Prestoline 30%
Prestoline Paste 33⅓%
Gaston's Silver Compound 33⅓%

Polish, Stove.
Joseph Dixon's ..... ₱ gro $6.00, 10%
Gem ..... ₱ gro $4.50, 10%
Gold Medal ..... ₱ gro $6.00, 25%
Mirror ..... ₱ pro $6.00, —%
Lustro ..... ₱ gro $4.75
Ruby ..... ₱ gro $3.75
Rising Sun, 5 gro lots ..... ₱ gro $5.50
Dixon's Plumbago ..... ₱ ℔ 8¢
Boynton's Noon Day, ₱ gro 13.00
Parlor Pride Stove Enamel .. ₱ gro
Yates' Liquid, 2 3 5 10 gal.... ₱ gal ... $0.80 .70 .60 .50
Yates Standard Paste Polish, 10-℔ cans, ₱ ₱ ℔ 12½¢
Jet Black ..... ₱ gro $3.50
Japanese ..... ₱ gro $3.50
Fireside ..... ₱ gro $2.50
Diamond O. K. Enamel ..... ₱ gro $19.00
Bonnell's Liquid Stove Polish. ₱ gro $9.00
Bonnell's Paste Stove Polish. ₱ gro $6.00
Black Eagle Bensine Paste, 5 and 10 ℔ cans ..... 12½¢
Black Jack Water Paste, 5 and 10 ℔ cans ..... 12½¢
Nickel Plate Paste ..... ₱ gro $6.00

Poppers, Corn—
Round or Square, 1 qt .. ₱ gr $10.00@10.50
Round or Square, 1½ qt .. ₱ gr $15@15.50
Round or Square, 2 qt .. ₱ gr $18.50@19.00

Post Hole and Tree Augers and Diggers—See Diggers, Post Hole, &c.

Potato Parers—See Parers, Potato.

Pots.
Glue—
Tinned 40%
Enameled ..... 40&5%
Family, Howe's "Eureka" 40%
Family, L. F. C.'s "Handy" 50%

Presses.
Fruit and Jelly—
Enterprise Mfg. Co ..... 20&10@30%
Henis ..... ₱ doz $3.50
Shepard's Queen City 40%
Silver & Co ..... ₱ doz $2.75

Pruning Hooks and Shears.—See Shears.

Pullers.
Nail.
Curtiss Hammer ..... ₱ doz $9.00
Giant, No. 1 ..... ₱ doz. $13.00, 10%
Giant, No. 2 ..... ₱ doz, $15.00, 10%
Pelican ..... ₱ doz, $9.00, 25%

Pulleys—
Hot House, Awning, &c ..... 60&10%
Japanned Screw ..... 60&10%
Brass Screw ..... 60&10%
Japanned Side ..... 66⅔&10%
Japanned Clothes Line ..... 60&10%
Empire Sash Pulley ..... 55@60%
Moore's Sash, Anti-Friction 50%
Hay Fork, Solid Eye, $4.00; Swivel, $4.50 ..... 50&10@50&10&5%
Hay Fork, "Anti-Friction," 5 in. Solid, $5.70 ..... 50%
Hay Fork, "F" Common and Pat. Bushed 20%
Hay Fork, Tarbox Pat. Iron 20%
Hay Fork, Reed's Self-Lubricating ... 60%
Shade Rack 45%
Tackle Blocks ..... See Blocks
Moore's Anti-Friction 5 in. Wheel, ₱ doz $12.00 ..... 40%

Pumps—
Cistern, Best Makers ..... 60@60&10%
Pitcher Spout, Best Makers ..... 67½@70%
Pitcher Spout, Cheaper Goods. 70@70&5%

Punches—
Saddlers' or Drive, good, ₱ doz ... 60@65¢
Bemis & Call Co.'s Cast Steel Drive. 50&5%
Bemis & Call Co's Springfield Socket. 50&5%
Spring, good quality .... ₱ doz $2.50@2.60
Spring, Leach's Pat 15%
Bemis & Call Co.'s Spring and Check .. 40%
Solid Tinners', P.S. & W. Co., ₱ doz $1.44, 55%
Tin'rs' Hollow Punches P.S. & W. Co. 20&2%
Rice Hand Punches 15%
Avery's Revolving 40%
Avery's Saw-Set and Punch. See Saw Sets.

Rail—

Sliding Door, Wr't Brass, ₱ ft. 35¢ 15%
Sliding Door, Bronzed Wr't Iron .. ₱ ft. 7¢
Sliding Door, Iron, Painted, ₱ foot 4¢, 40%
Barn Door Eight-In.

	¼	½	¾
Per 100 feet	$2.00	2.50	3.10, 10%

B. D. for N. E. Hangers—

	Small.	Med.	Large.
Per 100 feet	$2.15	2.70	3.25 .. net

Terry's Steel Rail, ₱ foot ..... 4½¢
Victor Track Rail, 7¢ ₱ foot ..... 50&2%
Carrier Steel Rail, ₱ foot ..... 4½¢
Moore's Wrought Iron 25%

Rakes—
Cast Steel, Association goods .. 66⅔&@70%
Cast Steel, outside goods 60&10&10@70&5%
Malleable ..... 70@70&5%
Gibbs Lawn Rake ..... $12.00, 50&15
Canton Lawn Rake ..... $9.00, 50&10
Ft. Madison Prize Bow Brace and Peerless 55%
Fort Madison Steel Tooth Lawn Rake, $6.00 ..... 25%

Razors—
J. R. Torrey Razor Co 20%
Wostenholme and Butcher, $10.00 to £, 10%
Jordan's AAA1, list Nov. 1, 1889 ..... 50%
Jordan's Old Faithful, list Nov. 1, '89. 50%
Electric ..... List net

Razor Strops—See Strops, Razor.

Rings and Ringers.
Bull Rings—
Union Nut Co 55%
Sargent's ..... 66⅔&10@70&5%
Hotchkiss' low list 30%
Humason, Beckley & Co.'s. ..... 70&10%
Peck, Stow & W. Co's .. 50&10@50&10&10%
Ellrich Hdw. Co., White Metal, low list. 50@50&10%
Hog—
Top of the Hill Ringers ..... ₱ doz $2.00
Top of the Hill Rings ..... ₱ doz $1.25
Hill's Improved Ringers ... ₱ doz $1.25
Hill's Old Style Ringers .... ₱ doz $1.12½
Hill's Tongs ..... ₱ doz $3.00
Hill's Rings ..... ₱ doz bxs $1.00
Perfect Rings ..... ₱ doz bxs $1.50
Perfect Ringers ..... ₱ doz $2.15@$2.25
Blair's Hog Ringers ..... ₱ doz $2.00
Blair's Hog Rings ..... ₱ doz 90¢@$1.00
Champion Ringers ..... ₱ doz $2.00
Champion Rings, Double ..... ₱ doz $2.25
Brown's Ringers ..... ₱ doz $2.00
Brown's Rings ..... ₱ doz $1.15@1.25

Rivets and Burrs—
Iron, list Nov. 17, '87 ..... 40%
Copper ..... 50@50&10%
Coppered Iron, Bettina Brand 40%

Rivet Sets—See Sets.

Rods—
Stair, Brass ..... 25&2%
Stair, Black Walnut .. .. ₱ doz 40¢

Rollers—
Barn Door, Sargent's list ..... 60&10&10%
Acme Moore's Anti-Friction 55%
Union Barn Door Roller 70%

Rope—*See Trade Report.*
Manila ... ½ in. and larger ..... ₱ ℔ 11¾¢
Manila ..... ⅜ in. ₱ ℔ 12¾¢
Manila ..... ¼ and 5-16 in. ₱ ℔ 13¾¢
Manila Tarred Rope ..... ₱ ℔ 11 ¢
Manila, Hay Rope ..... ℔ ℔ 11½¢
Sisal ..... ½ inch and larger ₱ ℔ 8 ¢
Sisal ..... ⅜ in. ₱ ℔ 8½¢
Sisal ..... ¼ and 5-16 in. ₱ ℔ 8¾¢
Sisal, Hay Rope ..... ₱ ℔ 8 ¢
Sisal, Tarred Rope ..... ₱ ℔ 7½¢
Sisal, Medium Lathe Yarn ..... ₱ ℔ 7 ¢
New Zealand ... ½ in. and larger ₱ ℔ 7¾¢
New Zealand ..... ⅜ inch, ₱ ℔ 8¼¢
New Zealand, ¼ and 5-16 inch, ₱ ℔ 9¼¢
New Zealand, Hay Rope ..... ₱ ℔ 7¾¢
New Zealand, Tarred Rope .... ₱ ℔ 7½¢
Note.—Manufacturers' prices on above ¾¢ ₱ ℔ less, f. o. b. factory.
Cotton Rope ..... ₱ ℔ 15@18¢ net
Jute Rope ..... ₱ ℔ 6½@6¾¢
Wire—
List May 1, 1886.
Iron ..... 32½&2½%
Iron, Galvanized ..... 40&2½%
Cast Steel ..... 40&2½%

Rules—
Boxwood ..... 80&10&10@80&10&10&10%
Ivory ..... 50@50&10%
Starrett's Rules and Straight Edges, Steel ..... 25&10%

Sad Irons—See Irons, Sad.

Sand and Emery Paper and Cloth—See Paper and Cloth, Sand and Emery.

Sash Cord—See Cord, Sash.

Sash Locks—See Locks, Sash.

Sash Weights—See Weights, Sash.

Sausage Stuffers or Fillers—See Stuffers or Fillers, Sausage.

Saws—
Disston's Circular 45%
Disston's Cross Cuts 45%
Disston's Hand 30%
Woodrough & McParlin.
Hand, Panel and Rip 25%
Narrow Champion Cross Cuts with Handles, ₱ foot ..... 20¢
Champion Thin Back Cross Cuts, ₱ foot ..... 28¢
Champion Extra Thin Back Cross Cuts, ₱ foot ..... 31¢
One Man Champion Cross Cuts, ₱ foot ..... 40¢
Wheeler, Madden & Clemson Mfg. Co.
Hand, Panel and Rip 30%
Narrow Champion Cross Cuts with Handles, ₱ foot ..... 20¢
Champion Thin Back Cross Cuts, ₱ foot ..... 28¢
Champion Extra Thin Back Cross Cuts, ₱ foot ..... 31¢
One Man Champion Cross Cuts, ₱ ft. 40¢

Atkins' Circular Shingle and Heading dis 50%
Atkins' Silver Steel Diamond X Cuts ₩ foot 70¢
Atkins' Special Steel Dexter X Cuts ₩ foot 50¢
Atkins' Special Steel Diamond X Cuts ₩ foot 32¢
Atkins' Champion and Electric Tooth X Cuts ₩ foot 30¢
Atkins' Hollow Back X Cuts. ₩ foot 20¢
Atkins' Mulay, Mill and Drag 40%
Atkins' One-Man Saw, with handles, ₩ foot 40¢
Peace Circular and Mill 45%
Peace Hand Panel and Rip 25%
Peace Cross Cuts 15%
Richardson's Circular and Mill 45%
Richardson's X Cuts 45%
Richardson's Hand, &c. 25%
C. E. Jennings & Co., Hand, Panel and Rip 25%

Hack Saws—

Griffin's, complete 40&10@50%
Griffin's Hack Saw, Blades 40&10@50%
Star Hack Saws and Blades 25%
Eureka and Crescent 25%

Scroll—

Lester, complete, $10.00 25%
Rogers, complete, $4.00 25%
Barnes' Builders' and Cabinet Makers', $15 25%
Barnes' Scroll Saw Blades 35%

Saw Frames—See Frames, Saw.

Saw Sets—See Sets, Saw.

Saw Tools—See Tools, Saw.

Scales—

Hatch, Counter, No. 171, good quality, ₩ doz $21.00
Hatch, Tea, No. 161 ₩ doz $6.75@$7.00
Union Platform, Plain $2.10@2.20
Union Platform, Striped $2.20@2.30
Chatillon's Grocers' Trip Scales 50%
Chatillon's Eureka 25%
Chatillon's Favorite 40%
Family, Turnbulls 30@30&10%
Riehle Bros.' Platform 40%

Scale Beams—See Beams, Scale

Scissors, Fluting 45%

Scrapers—

Adjustable Box Scraper (S. R. & L. Co.) $6.50 30&10%
Box, 1 Handle ₩ doz $4.00, 10%
Box, 2 Handle ₩ doz $6.00, 10%
Defiance Box and Ship 20&10%
Foot 50&10@60%
Ship, Common ₩ doz $3.50 net
Ship, R. I. Tool Co. 10%

Screen Window and Door Frames—See Frames.

Screw Drivers—See Drivers, Screw.

Screws,

Bench and Hand—

Bench, Iron 55&10@55&10&10%
Bench, Wood, Beech ₩ doz $2.25
Bench, Wood, Hickory 20&10%
Hand, Wood 25&10@25&10&5%
Lag, Blunt Point, list Jan. 1, 1890 75&10%
Coach and Lag, Gimlet Point, list Jan. 1, 1890 75@75&10%
Bed's 25&5%
Hand Rail, Sargent's 66⅔&10%
Hand Rail, H. & B. Mfg. Co 70&10@75%
Hand Rail, Am. Screw Co. 75%
Jack Screws, Millers Falls list..50@50&5%
Jack Screws, P. S. & W. 35%
Jack Screws Sargent..60&10@60&10&5%
Jack Screws Stearns' 40@40&10%

Cork—

Humason & Beckley Mfg. Co..40&10@50%
Williamson's 33⅓@33⅓&5%
Howe Bros & Hulbert 35%

Machine—

Flat Head, Iron 55%
Round Head, Iron 50%

Wood—

List January 1, 1891.
Flat Head Iron } See Trade Report
Round Head Iron
Flat Head Brass
Round Head Brass
Flat Head Bronze
Round Head Bronze
Rogers' Drive Screws 66⅔%

Scroll Saws—See Saws, Scroll.

Scythe Snaths—See Snaths, Scythe.

Sets,

Awl and Tool.

Aiken's Sets, Awls and Tools, No. 20, ₩ doz $10.00 55&10%
Fray's Adj. Tool Hdls., Nos. 1, $12; 2, $18; 3, $12; 4, $9. 25@25&10%
Miller's Falls Adj. Tool Hdls.. Nos. 1, $12. 2, $18. 25%
Henry's Combination Haft ₩ doz $6.50
Brad Sets, No. 42, $10.50; No. 43, $12.50..70&10&5%
Stanley's Excelsior: No. 1, $7.50; No. 2, $4.00; No. 3, $5.50 30&10%

Nail—

Square ₩ gr., $4.00@$4.25
Round ₩ gr. $3.25
Buck Bros. 27½%
Cannon's Diamond Point ₩ gr., $12, 20%

Rivet.

Regular list 50&10%

Saw—

Stillman's Genuine ₩ doz $5.00@7.75, 40&5%
Stillman's Imita ₩ doz $3.25@5.25, 40&5@40&10%
Common Lever ₩ doz $2.00, 40&5%
Morrill's No. 1, $15.00; Nos. 3&4, $24.00. 40&10@50%
Leach's..No. 0, $8.00; No. 1, $15, 15@20%
Nash's 20&10@20&10&10%
Hammer, Hotchkiss $5.50, 10%
Hammer, Bemis & Call Co.'s new Pat. 30&5%
Bemis & Call Co.'s Lever and Spring Hammer 30&5%
Bemis & Call Co.'s Plate 10%
Bemis & Call Co.'s Cross Cut 12½%
Aiken's Genuine $13.00, 50&10%
Aiken's Imitation $7.00, 55&5%
Hart's Pat. Lever 20%
Disston's Star 25%
Leopold 40&10@50%
Atkin's Lever ₩ doz No. 1, $6.00
Atkin's Criterion ₩ doz No. 1, $6.00
Croissant (Keller), No. 1, $15.00; No. 2, $24.00 40&10%
Avery's Saw Set and Punch 50%
Chieftain H. R. Co.'s Superior ₩ doz $15, 50%

Sharpeners, Knife.

Parkin s.
Applewood Handles ₩ doz $6.00, 40%
Rosewood or Cocobolo ₩ doz $9.00, 40%

Shaves, Spoke.

Iron 45%
Wood 30%
Bailey's (Stanley R. & L. Co.) 40&10%
Stearns' 30&10%
Cincinnati 25&10%

Shears—

American (Cast) Iron 75&10@75&10&5%
Barnard's Lamp Trimmers ₩ doz $3.75
Tinners' 20&2%
Seymour's, List, Dec., 1881. 60&10&10@60&10&10&5%
Heinisch's, List, Dec., 1881. 60&10&10@60&10&10&5%
Heinisch's Tailor's Shears 33⅓%
First quality C. S. Trimmers..80@80&10%
Second quality C. S. Trimmers. 80&10@80&10&10%
Acme Cast Shears 10&10%
Diamond Cast Shears 10%
Clipper 10&10%
Victor Cast Shears 75&10@75&10&5%
Howe Bros. & Hulbert, Solid Forged Steel 40%
Chicago Drop Forge & F. Co., Solid Steel Forged 60%
Clauss Shear Co., Japanned 70%
Clauss Shear Co., Nickeled, same list 60%
Electric List net

Pruning Shears and Hooks.

Disston's Combined Pruning Hook and Saw ₩ doz $18.00, 20&10%
Disston's Pruning Hook, ₩ doz $12.00, 20&10%
E. S. Lee & Co.'s Pruning Tools 40%
Pruning Shears, Henry's Pat, ₩ doz $3.75@4.00 net
Henry's Pruning Shears, ₩ doz $4.25@4.50 net
Wheeler, M. & C. Co.'s Combination, ₩ doz $12.00, 20%
Dunlap's Saw and Chisel, ₩ doz $8.50, 30%
J. Mallinson & Co., No. 1, $5.25; No. 2 7.25
P., S. & W. Co. 60%

Tinners', &c.—

Shears and Snips (P. S. & W.) 20@25%
Snips, J. Mallinson & Co. 33⅓%

Sheaves—

Sliding Door—

M. W. Co., list July, 1888..50&10@60&5%
R. & E., list Dec. 18, 1885 55&20%
Corbin's list 60&10&2%
Patent Roller 60&10&2%
Patent Roller, Hatfield's 75%
Russell's Anti-Friction, list Dec. 18, 1885 60&2%
Moore's Anti-Friction 50%

Sliding Shutter—

R. & E. list Dec. 18, 1885 60&10&2%
Sargent's list 60&10%
Reading list 60&10&10%

Ship Tools—

L. & I. J. White 20&5%

Shoes, Horse, Mule, &c.—

Horse—

Burden's, Perkins', Phœnix, at factory. $4.00

Mule—

Add $1 ₩ keg to above prices.

Ox, Wrought—

Ton lots ₩ ℔ 9¢
1000 ℔ lots ₩ ℔ 9½¢
500 ℔ lots ₩ ℔ 10¢

Shot—

(Eastern prices 2¢ off, cash, 5 days.

Drop, ₩ bag, 25 ℔ $1.30
Drop, ₩ bag, 5 ℔ .32
Buck and Chilled, ₩ 25-℔ bag 1.61
Buck and Chilled, ₩ 5-℔ bag .37
(See Trade Report.)

Shovels and Spades—

Ames' Shovels, Spades, &c., list Nov. 1, 1885 20%
NOTE.—Jobbers frequently give 5@7½% extra on above.
Griffith's Black Iron 50&10%
Griffith's C. S. 60@60&10%
Griffith's Solid C. S. R. R. Goods 20%
St. Louis Shovel Co. 20@20&7½%
Hussey, Binns & Co. 15@25%
Hubbard & Co. 20@20&7½%
Lehigh Mfg. Co. 50&10%
Payne Pettebone & Son 35%&5%
Remington's (Lowman's Pat. ₩ 40&10@40%
Rowland's, Black Iron 50&10%
Rowland's Steel 60&5@60&10%

Shovels and Tongs—

Iron Head 60&10@60&10&5%
Brass Head 60&10&10%

Sieves—

Mann's Tin Rim 50&25%
Buffalo Metallic, S. S. & Co. 50&25%
Shaker (Earler's Pat.) Flour Sifters ₩ doz $2.00; ₩ gr $21.60
Electric ₩ gr $21.00
A. & W. Sifters ₩ doz 2.00
Hunter's ₩ doz $2.00
Smith's Adjustable Sifters ₩ doz $2.00
Smith's Adjustable Milk Strainer. ₩ doz $2.00
Smith's Adjustable T. & C. Strainer. ₩ doz. $1.25

Sieves, Wooden Rim—

	Iron.	Plated.
Mesh 18, Nested, ₩ doz..	80¢	$1.00
Mesh 20, Nested, ₩ doz..	95¢	1.10
Mesh 24, Nested, ₩ doz..	$1.15	1.25

Skeins, Thimble—

Western list 75&5@75&10%
Columbus Wrt. Steel. Special net prices
Coldbrookdale Iron Co. 60%
Utica P. S. T. Skeins 60%
Utica Turned and Fitted 35%

Slates—

School, by case 50&10@50&10&10%

Snaps, Harness, &c.—

Anchor (T. & S. Mfg. Co.) 65%
Fitch's (Bristol) 50&10%
Hotchkiss 10%
Andrews. 50%
Sargent's Patent Guarded 70&10&10%
German, new list 40&10%
Covert 50&2%
Covert, New Patent 50&5&2%
Covert, New R. E. 60&2%
Covered Spring 60&10&10%

Snaths, Scythe.

List 50&10@50&10&5%

Soldering Irons—See Irons, Soldering.

Spittoons, Cuspidors, &c.

Standard Fiberware—

Cuspidors, 8½-inch, ₩ doz., No. 5, $8; No. 5X $9.
Spittoons, Daisy, 8-inch, No. 1, $4; 10 and 11 inch, $6.

Spoke Shaves—See Shaves, Spoke.

Spoke Trimmers—See Trimmers, Spoke.

Spoons and Forks—

Tinned Iron—

Basting, Cen. Stamp. Co.'s list 70&10%
Solid Table and Tea, Cen. Stamp. Co.'s list 70&10%
Buffalo S. S. & Co. 33⅓&2%

Silver-Plated—(4 mos. or 5% cash 30 days).

Meriden Brit. Co., Rogers 40&15%
C. Rogers & Bros. 40&15%
Rogers & Bro. 40&15%
Reed & Barton 40@40&5%
Wm. Rogers Mfg. Co. 40, 15&5%
Simpson, Hall, Miller & Co. 40, 15&5%
Holmes & Edwards Silver Co. 40, 15&5%
L. Boardman & Son 50&12½%

Miscellaneous.

Holmes & Edwards Silver Co.:
No. 67 Mexican Silver 50&10&5%
No. 30 Silver Metal 50&10&5%
No. 24 German Silver 50&10&5%
No. 50 Nickel Silver 50&5%
No. 49 Nickel Silver 50&10&5%
Wm. Rogers Mfg. Co.
Rogers' Silver Metal 50, 10&6%
18% Rogers' German Silver 60&6%
22% Rogers' Nickel Silver 50&6%
German Silver 50@50&5
German Silver, Hall & Elton 50&5% cash
Nickel Silver 50&5@50&10&5% cash
Britannia 60%
Boardman's N'ck'l Silver. 40&7½&5% cash
Boardman's Britannia Spoons, case lots 50&12½&5% cash

Springs—

Door.—

Torrey's Rod, regular size ₩ doz $1.30
Gray's, ₩ gr., $20.00 20%
Bee Rod ₩ gr., $20.00 20%
Warner's No. 1, ₩ doz, $2.50; No. 2, $3.30 40&10@50%
Gem (Coil), list April 19, 1886 10%
Star (Coil), list April 19, 1886 20%
Victor (Coil) 60@60&10%
Champion (Coil) 60&10@60&10&10%
Philadelphia, 5 in., $5.00; 8 in., $7.75.. %
Cowell's No. 1, ₩ doz, $18.00; No. 2, $15.00 50%
Rubber, complete, ₩ doz, $4.50..55&10%
Hercules 50%
Shaw Door Check and Spring 25@30@35%

Carriage, Wagon, &c.—

Elliptic, Concord, Platform and Halt Scroll 60&10&10%
Cliff's Bolster Springs 25%

Squares—

Steel and Iron } 80 &10%
Nickel-Plated } 80 &10%
Try Square and T Bevels 60&10@60&10 &10%
Disston's Try Square and T Bevels 50%
Winterbottom's Try and Miter 30&10%
Starrett's Micrometer Caliper Squares. 25%
Avery's Flush Bevel Squares 40%
Avery's Bevel Protractor 50%

Squeezers.

Fodder.—

Blair's ₩ doz $2.00
Blair's "Climax" ₩ doz $1.25

Lemon—

Porcelain Lined, No. 1 ₩ doz $6.00, 25&30%
Wood, No. 2 ₩ doz $3.00, 35%
Wood, Common ₩ doz $1.70@1.75
Dunlap's Improved ₩ doz $3.75, 20%
Sammis No. 1, $5.00; No. 2, $9; 12, $18 ₩ doz 25&10%
Jennings' Star ₩ doz $2.50
The Boss ₩ doz $2.50
Dean's..Nos. 1, ₩ doz $6.50; 2, $3.35; 3, $1.90; Queen, $2.50
Little Giant 50@50&5%
King 40&5%
Hotchkiss Straight Flash ₩ doz $12.00
Silver & Co., Glass ₩ gro. $9.00

Standard Fiber Ware—See Ware, Standard Fiber.

Staples.

Blind—

Barbed, 4a. and larger ₩ ℔ 7@7½¢
Barbed, 6a. ₩ ℔ 8@8½¢
Fence Staples, Galvanized } Same price as B'rb Wire. See Trd. Rep.
Fence Staples, Plain }

Steelyards 40&10@50%

Stocks and Dies—

Blacksmith's
Waterford Goods 40@40&10%
Butterfield's Goods 40@40&10%
Lightning Screw Plate 25@30%
Reece's New Screw Plates 33⅓&5@40%
Reversible Ratchet 30 %
Gardner 25%

Stops, Bench.

Morrill's ₩ doz $9, 50%
Hotchkiss's ₩ doz $5 10@10&10%
Weston's, No. 1, $10; No. 2, $9.25&10&5%
McGill's ₩ doz $3 10%
Cincinnati 25&10%

Stone—

Hindostan No. 1, 3¢; Axe, 3½¢; Slips No. 1, 4½¢
Sand Stone ₩ ℔ 2½¢
Washita Stone, Extra ₩ ℔ 20@21¢
Washita Stone, No. 1 ₩ ℔ 15&16¢
Washita Stone, No. 2 ₩ ℔ 11&12¢
Washita Slips, No. 1, Extra.. ₩ ℔ 37@40¢
Washita Slips, No. 1 ₩ ℔ 25&26¢
Arkansas Stone, No. 1, 4 to 6 in ₩ ℔ $1.50
Arkansas Stone, No. 1, 6 to 9 in ₩ ℔ $1.85
Turkey Oil Stone, 4 to 8 in ₩ ℔ 40¢
Turkey Slips ₩ ℔ $1.00@1.50
Lake Superior, Chase ₩ ℔ 16¢
Lake Superior Slips, Chase ₩ ℔ 31@32¢
Seneca Stone, Red Paper Brand ₩ ℔ 18@20¢
Seneca Stone, High Rounds ₩ ℔ 20@25¢
Seneca Stone, Small Whets ₩ gro $24.00

Stove Polish—See Polish, Stove.

Stretchers, Carpet.

Cast Steel, Polished ₩ doz $2.25
Cast Iron, Steel Points ₩ doz 80¢
Socket ₩ doz $1.75
Julliard's 25@25&10%

Strops, Razor—

Genuine Emerson 60@60&5%
Imitation " ₩ doz $2.00, 20&10&5%
Torrey's 30%
Badger's Belt and Com ₩ doz $2.00
Lamont Combination ₩ doz $4.00
Jordan's Pat. Padded, list Nov. 1, '89 .50%
Electric List net

Stuffers or Fillers, Sausage—

Miles' "Challenge," ₩ doz $20, 50&50&5%
Perry ₩ doz, No. 1, $15.00; No. 0, $21.00 50&5@50&10%
Draw Cut No. 4, each $30.00 20%
Enterprise Mfg. Co. 20&10@30%
Silver's 40&10%

Sweepers, Carpet.

Bissell No. 5 ₩ doz $17.00
Bissell No. 7 New Drop Pan ₩ doz $19.00
Bissell, Grand ₩ doz $36.00
Grand Rapids ₩ doz $24.00
Crown Jewel, No. 1, $18.00; No. 2, $19.00; No. 3, $20.00
Magic ₩ doz $15.00
Jewel ₩ doz $17.00
Improved Parlor Queen, Nickeled ₩ doz $27.00
Japanned ₩ doz $24.00
Excelsior ₩ doz $22.00
Garland ₩ doz $18.00
Parlor Queen ₩ doz $24.00
Housewife's Delight ₩ doz $15.00
Queen ₩ doz $16.00
Queen, with band ₩ doz $18.00
King ₩ doz $30.00
Weed, Improved ₩ doz $18.00
Hub ₩ doz $16.00
Cog-Wheel ₩ doz $16.00
Conqueror ₩ doz $22.00
Easy ₩ doz $22.00
Monarch ₩ doz $22.00
Goshen ₩ doz $21.00

Tacks, Brads, &c.—

List Oct. 19, 1889. Standard Weights.

Carpet Tacks—
American Iron, Blued 77½%
Am'rican Iron, Tin'd or Cop'd. 77½%
Steel, Plain or Bright 75%
Steel, Tinned or Coppered 75%
Swedes Iron, Blued 75%
Swedes Iron, Tinned or Cop'd 75%
American Iron Cut Tacks 75%
Swedes Ir. Uphol'rs' Tacks, Blued. 75%
Swedes Iron Upholsterers' Tacks, Tinned 77½%
Gimp and Lace Tacks, Blued 75%
Gimp and Lace Tacks, Tinned 77½%
Swedes Iron Basket or Trimmers' Tacks 70&10%
Miners' Tacks 77½%
Bill-Posters' or Railroad Tacks 75%
Bill-Posters' or Railroad Tacks, Tinned 77½%
Copper Tacks 40%
Copper Finish. & Trunk Nails 40%
Cigar Box Nails 50%
Zinc Glaziers' Points 50%
Picture-Frame Points 50%
Looking-Glass Tacks 50%
Brush Tacks 60%
Tin-Capped Trunk Nails 60%
Finishing Nails 70%
Trunk and Clout Nails, Black and Tinned 72½%
Common and Patent Brads 70%
Hungarian Nails 70%
Basket and Chair Nails 65%
Leathered Carpet Tacks 40%

Miscellaneous—

Double-Pointed, 120 count 85&10%
Wire Carpet Nails 50&10%
Plymouth Rock Steel Carpet Tacks 25%

Extra 10 @ 10&10 %

Wire Brads & Nails, see Nails, Wire.
Steel-Wire Brads, R. & E. Mfg. Co.'s list.....60&10%

Tapes, Measuring—

American.....40@40&5%
Spring.....40%
Chesterman's, Regular list.....26@30%

Thermometers—

Tin Case.....80@80&10%

Thimble Skeins—See Skeins.

Ties, Bale- Steel

Standard Wire, list.....50&10&5%

Tinners' Shears, &c.—See Shears, Tinners', &c.

Tinware—

Stamped, Japanned and Pieced, list Jan. 20 1887.....70&10@70&10&5%

Tire Benders, Upsetters, &c—
See Benders and Upsetters, Tire.

Tools.

Coopers'—

Bradley's.....20%
Barton's.....20@20&5%
L. & I. J. White.....20&5%
Albertson Mfg. Co.....25%
Beatty's.....30%
Sandusky Tool Co.....30@30&5%
Shaves, Cincinnati Tool Co.....20%

Lumber.

Ring Peavies, "Blue Line"...₩ doz $20.00
Ring Peavies, Common.....₩ doz $18.00
Steel Socket Peavies.....₩ doz $21.00
Mall. Iron Socket Peavies....₩ doz $19.00
Cant Hooks, "Blue Line"..₩ doz $16.00
Cant Hooks, Common Finish..₩ doz $14.00
Cant Hooks, Mall. Socket Clasp, "Blue Line" Finish.....$16.00
Cant Hooks, Mall. Socket Clasp, Common Finish.....₩ doz $14.50
Cant Hooks, Clip Clasp, "Blue Line" Finish.....₩ doz $14.00
Cant Hooks, Clip Clasp, Common Finish.....₩ doz $12.00
Hand Spikes....₩ doz 6 ft., $15.00; 8 ft., $20.00

Pike Poles, Pike & Hook, ₩ doz., 12 ft., $11.50; 14 ft., $12.50; 16 ft., $14.50; 18 ft., $17.50; 20 ft., $21.50.
Pike Poles, Pike only, ₩ doz, 12 ft., $10.00; 14 ft., $11.00; 16 ft., $13.00; 18 ft., $16.00; 20 ft., $20.00.
Pike Poles, not ironed, ₩ doz, 12 ft. $6.00; 14 ft., $7.00; 16 ft., $9.00; 18 ft., $12.00; 20 ft., $16.00.
Setting Poles, ₩ doz, 12 ft., $14.00; 14 ft., $15.00; 16 ft., $17.00
Swamp Hooks.....₩ doz $18.00

Saw.

Atkins' Perfection.....₩ doz $12.00
Atkins' Excelsior.....₩ doz $6.00
Atkins' Giant.....₩ doz $4.00

Tobacco Cutters—See Cutters, Tobacco.

Transom Lifters — See Lifters, Transom.

Traps—

Game—

Newhouse.....40@40&5%
Oneida Pattern.....70&10%
Game, Blake's Patent.....40&10&5%

Mouse and Rat—

Mouse Wood, Choker, ₩ doz holes, 11@12¢
Mouse, Round Wire.....₩ doz $1.50, 10%
Mouse, Cage, Wire.....₩ doz $2.50, 10%
Mouse, Catch-'em-alive....₩ dz $2.50 15%
Mouse, Bonanza.....₩doz $0.90@$1.00
Mouse, Delusion.....₩ $1.00@$1.25
Rat, Decoy.....₩ gr $10.00, 10%
Ideal.....₩ gr $10.00
Cyclone.....₩ gr $5.25
Hotchkiss Metallic Mouse, 5-hole traps, ₩ doz., 90¢; in full cases, ₩ doz.....75¢
Hotchkiss Imp. Rat Killer..₩ gro $18.50
Hotchkiss New Rat Killer...₩ gro $16.50
Schuyler's Rat Killer.....₩ gro $15.00

Triers—

Butter and cheese.....25%

Trimmers, Spoke.

Bonney's.....₩ doz $10.00, 50%
Stearns'.....20&10%
Ives', No. 1, $15.00; No. 2, $12.00 ₩ doz. 55&10%
Douglas'.....₩ doz $9.00, 20%
Cincinnati.....25%

Trowels—

Lothrop's Brick and Plastering, 20&10&5@35%
Reed's Brick and Plastering.....15%
Disston's Br'k and Plastering.....25%
Peace's Plastering.....25%
Clement & Maynard's.....20%
Rose's Brick.....15@20%
Brade's Brick.....25%
Worrall's Brick and Plastering.....20%
Garden.....70%

Trucks, Warehouse, &c.—

B. & L. Block Co.'s list, '82.....40%

Tubes, Boiler—

See Pipe.

Twine—

Flax Twine—	BC.	B.
No. 9, ¼ and ⅓ ℔ Balls	26¢	34¢
No. 12, ¼ and ⅓ ℔ Balls	25¢	33¢
No. 18, ¼ and ⅓ ℔ Balls	22¢	32¢
No. 24, ¼ and ⅓ ℔ Balls	22¢	32¢
No. 36, ¼ and ⅓ ℔ Balls	20¢	31¢
No. 264, Mattrass, ¼ and ⅓ ℔ Balls	52@54¢	
Chalk Line, Cotton, ⅓ ℔ Balls	.25¢	
Mason Line, Linen, ⅓ ℔ Balls	.50¢	
2-Ply Hemp, ¼ and ⅓ ℔ Balls (Spring Twine)	.15¼¢	
3-Ply Hemp, 1 ℔ Balls	16¢@16½¢	
3-Ply Hemp, 1½ ℔ Balls	15¢@15½¢	
Cotton Wrapping, 5 Balls to ℔	.15¢@16¢	
2, 3, 4 and 5-Ply Jute, ⅓ ℔ Balls	.10¢	
Wool	6½¢@6¾¢	
Paper	13¢@14¢	
Cotton Mops, 6, 9, 12 and 15 ℔ to doz.	.18¢	

Vises—

Solid Box.....50&10@50&10&5%

Parallel—

Fisher & Norris Double Screw.....15&10%
Stephens'.....25@30%
Parker's.....20@25%
Wilson's.....55%
Howard's.....40%
Bonney's.....40&10%
Millers Falls.....40@40&10%
Trenton.....40&5@40&10%
Merrill's.....15@20%
Sargent's.....60&10&10%
Backus and Union.....40%
Double Screw Leg.....15&10%
Prentiss.....20@25%
Simpson's Adjustable.....40%
Moore's.....20%

Saw Filers—

Bonney's, Nos. 2 & 3, $15.00.....40&10%
Stearn's.....33⅓&10@33⅓&10&10%
Stearn's Silent Saw Vises.....33⅓@35%
Sargent's.....66⅔&10%
Hopkins'.....₩ doz $17.50, 10%
Reading.....40&10%
Wentworth.....20&10%

Miscellaneous.

Combination Hand Vises.....₩ gr $42.00
Cowell Hand Vises.....20%
Bauer's Pipe Vises.....10%
Cincinnati.....25&10%
Enterprise Pipe Vises, each.....$3.00

Wagon Boxes—See Boxes, Wagon.

Washer Cutters—See Cutters Washer.

Wagon Jacks—See Jacks, Wagon.

Ware, Hollow, Enameled, &c.

Cast Iron, Hollow—

Stove Hollow-Ware—
Ground.....55&5@60&5%
Unground.....65&10@65&10&5%
White Enameled-Ware—
Maslin Kettles.....60&10&5%
Boilers and Saucepans.....40%
Tinned Boilers and Saucepans.....40%
Rustless Hollow-Ware.....50@50&5%
Gray Enameled-Ware—
Stove.....50%
Maslin Kettles.....60&10&10%
Boilers and Saucepans.....40&5%

Enameled—

Agate and Granite Ware, list Jan. 1, 1889.....33⅓&10%
Ironclad Enameled Ware...dis 33⅓&10%

Kettles—

Galvanized Tea-Kettles—

Inch	6	7	8	9
Each....	55¢	60¢	65¢	75¢

Standard Fiber—

	Per Dozen. Plain.	Dec'r'd
Wash-Basins, 10½ in.	$2.00	$2.25
Wash-Basins, 12 in.	2.25	2.75
Keelers, 11¼ in.		4.00
Cuspidors		8.00
Spittoons, "Daisy," 8 in.	4.00	4.50
Peck Measure	4.00	
Half-peck Measure	3.50	

See also Pails.

Indurated Fiber—25%

Spittoons, No. 2, ₩ doz.....$9.00
Basins, Ringed, ₩ doz., No. 2, $4.80; No. 3.....$4.20
Washtubs, Nested, Nos. 0, 1, 2 and 3 (4 pieces), ₩ nest.....$7.50
Keelers, Nested, Nos. 1, 2, 3 and 4 (4 pieces), ₩ nest.....$3.70
Butter Bowls 15, 17 and 19-inch (3 pieces), ₩ nest.....$2.25
Liquid Measures, pt., qt., 2 qt. and funnell (4 pieces) ₩ set.....$3.00
Dry Measures, 1, 2, 4, 8 and 16 qts. (5 pieces), ₩ set.....$3 00
See also *Pails.*

Silver Plated, Hollow—
4 mo. or 5 % cash in 30 days.

Reed & Barton.....
Meriden Britannia Co.....
Simpson, Hall, Miller & Co.....
Rogers & Brother.....
} 40&5%

Hartford Silver Plate Co.....
William Rogers Mfg. Co.....
} 40&5&5%

Washers—

Size hole	5-16	⅜	½	⅝ to 1⅜
Washers	6	5	2.0	2.65¢

In lots less than 200 ℔, ₩ ℔, add ¼¢, 5-℔ boxes 1¢ to list.

Wedges—

Iron.....₩ ℔ 3½¢
Steel.....₩ ℔ 4 ¢

Weights, Sash—

Solid Eyes.....₩ ton $18@$19

Well Buckets, Galvanized—See Buckets, Well, Galvanized.

Wheels, Well.

8 in., $2.25; 10 in., $2.70; 12 in., $3.25

Wire and Wire Goods—

Iron—

Market.
Br. & Ann., Nos. 0 to 18.....75%
Cop'd, Nos. 0 to 18.....72½%
Galv., Nos. 0 to 18.....65%
Tin'd, Tinned list Nos. 0 to 18.....65%
Stone,
Br. and Ann'd, Nos. 16 to 18.....75%
Bright and Ann'd, Nos. 19 to 26.....77½%
Br. and Ann'd, Nos. 27 to 36.....80%
Tinned.....
Tinned Broom Wire, 18 to 21, ₩ ℔...5½¢
Galvanized Fence, Nos. 8 and 9.....67½%
Annealed Fence, Nos. 8 and 9.....77½%
Annealed Grape, Nos. 10 to 14.....77½%
Brass, list Jan. 18, 1884.....25%
Copper, list Jan. 18, 1884.....25%
Barb Fence.....See Trade Report
Annealed Wire on Spools.....50%
Malin's Steel and Tin'd on Spools.....50%
Malin's Brass and Cop. on Spools.....40%
Cast Steel Wire.....50%
Stubs' Steel Wire.....$6.00 ₩ ℒ, 30#
Steel Music Wire, 12 to 30...60@70¢ ₩ ℔
Wire Clothes Lines, see Lines.
Wire Picture Cord, see cord.

Bright Wire Goods—

Standard list.....85%

Wire Cloth and Netting.

Painted Screen Cloth, good quality, ₩ 100 sq. ft., $1.40 @ $1.45
Galvanized Wire Netting.....70&10@75%

Wire Rope—See Rope, Wire.

Wrenches—

American Adjustable.....40%
Baxter's Adjustable "S".....40&10@50%
Baxter's Diagonal.....40&10@50%
Coes' Genuine.....50&3%
Coes' "Mechanics".....50&10&3%
Girard Standard.....65&10%
Lamson & Sessions' Engineers'.....60&10%
Lamson & Sessions' Standard.....70&10%
P. S. & W. Agricultural.... } 75& 5 @ 75 &10
Girard Agricultural.... }
Lamson & Sessions' Agric'l.. }
Bemis & Call's
Pat. Combination.....35%
Merrick's Pattern.....35%
Brigg's Pattern.....25%
Cylinder or Gas Pipe.....40&5%
No. 3 Pipe.....40&10%
Aiken's Pocket (Bright).....$6.00, 50&10%
The Favorite Pocket.....₩ doz $4.00, 40%
Webster's Pat. Combination.....25%
Boardman's.....20&10%
Always Ready.....25&5%
Alligator.....50%
Donohue's Engineer.....20&10%
Acme, Bright.....50&2%
Acme, Nickeled.....40&2%
Hercules.....
Walker's.....55&3%
Diamond Steel.....55&3%
Cincinnati Brace Wrenches.....25&10%
Tafts' Vise Wrench.....55&10&3%

Wringers, Clothes—

List September 20, 1890, 2% cash.

Wrought Goods—

Staples, Hooks, &c., list Jan. 12, 1886, 80&15@85%

PAINTS, OILS AND COLORS.—Wholesale Prices.

Animal and Vegetable Oils.

Linseed, City, raw..per gal.	58	@	62
Linseed, City, boiled.....	61	@	65
Linseed, Western, raw.....	52	@	54
Lard, City, Extra Winter..	52	@	53
Lard, City, Prime.....	49	@	50
Lard, City, Extra No. 1.....	45	@	46
Lard, City, No. 1.....	42	@	43
Lard, Western, prime.....	..	@	48
Cotton-seed, Crude, prime..	..	@	27
Cotton-seed, Crude, off grades.....	18	@	22
Cotton-seed, Summer Yellow, prime.....	33	@	34
Cottonseed, Summer Yellow, off grades.....	27½@		30
Sperm, Crude.....	70	@	72
Sperm, Natural Spring.....	68	@	69
Sperm, Bleached Spring.....	72	@	74
Sperm, Natural Winter.....	74	@	76
Sperm, Bleached Winter....	79	@	81
Whale, Crude.....	..	@	..
Whale, Natural Winter.....	..	@	52
Whale, Bleached Winter....	..	@	55
Whale, Extra Bleached.....	..	@	58
Sea Elephant, Bleached Winter.....	..	@	62
Menhaden, Crude, Sound...	23	@	25
Menhaden, Crude, Southern	..	@	..
Menhaden, Light Pressed..	26	@	27
Menhaden, Bleached W'ter.	31	@	32
Menhaden, Extra Bleached	35	@	..
Tallow, City, prime.....	..	@	44
Tallow, Western, prime....	..	@	..
Cocoanut, Ceylon.....	7½@		7¾
Cocoanut, Cochin.....	..	@	8½
Cod, Domestic.....	31	@	32
Cod, Foreign.....	33	@	34
Red Elaine.....	31	@	34
Red Saponified..... ₩ ℔	4½@		4¾
Bank.....per gal	24	@	..
Straits.....	25	@	..
Olive, Italian, bbls.....	65	@	68
Neatafoot, prime.....	62½@		75
Palm, prime, Lagos....₩ ℔	6½@		6¾

Mineral Oils.

Black, 29 gravity, 25 @ 30 cold test.....per gal	8½@		9
Black, 29 gravity, 15 cold test.....	9	@	9½
Black, 29 gravity, summer.	7	@	..
Cylinder, light, filtered....	15	@	..
Cylinder, dark, filtered	14	@	20
Cylinder, dard, st'm refined	10	@	18
Paraffine, 23½ @ 24 gravity.	12½@		13
Paraffine, 25 gravity.....	11½@		12
Paraffine, 28 gravity.....	10½@		11
Paraffine, red, 21 @ 22 gr'ty	..	@	14½
Paraffine, red, 23½@23 gr'ty	12½@		13

Paints and Colors.

Barytes, Prime White..... ₩ ton.	$21.00	@	22.50
Barytes, Amer. refined...	20.00	@	....
Barytes, Amer. No. 1....	18.00	@	....
Barytes, Amer. No. 2....	16.00	@	....
Barytes, Amer., off-color.	13.00	@	15.00
Blue, Celestial..... ₩ ℔	6	@	8
Blue, C hinese.....	50	@	55
Blue, Prussian.....	25	@	40
Blue, Ultramarine.....	10	@	30
Brown, Spanish.....	½@		1
Brown, Vandyke, Amer..	3	@	3½
Brown, Vandyke, English	6	@	8
Black, American Drop....	8	@	10
Black, English Drop.....	12	@	14
Black, Frankfort, Drop...	5	@	18
Black, Lamp, common...	12	@	18
Black, Lamp, medium....	19	@	25
Black, Lamp, prime.....	27	@	33
Carmine, No. 40, in bulk.	3.10	@	..
Carmine, No. 40, in boxes or barrels.....	3.20	@	..
Carmine, No. 40, in ounce bottles..₩	4.20	@	..
Chalk, in bulk.... ₩ ton.	2.40	@	2.50
Chalk, in bbls..₩ 100 ℔.	30	@	35
China Clay, English.... ₩ ton.	12.00	@	18.00
Cobalt Oxide, prep'd.....	2.90	@	....
Cobalt Oxide, black... lots 100℔.	2.60	@	....
Cobalt, Oxide, black..... less 100℔.	2.65	@	....
Green, Paris, in bulk.....	14	@	14½
Green, Paris, 170 @ 175 ℔ kegs.....	14½@		15
Green, Paris, small pack.	16	@	21
Green, Chrome, ordinary	9	@	13
Green, Chrome, pure....	22	@	25
Lead, Eng., B.B. white....	9	@	10
Lead, Amn. White, dry or in oil: Kegs, lots less than 1000 ℔..		@	7¾
Kegs, lots 1000 ℔ to 5 tons.		@	7½
Kegs, lots 5 tons to 12 tons..		@	7⅛
Kegs, lots 12 tons and over..		@	7
Lead ₩ white, in oil, 25 ℔ tin pails, add to keg price.....		@	½
Lead, White, in oil, 12½ ℔ tin pails, add to keg price.....		@	1
Lead, White, in oil, 1 to 5 ℔ assorted tins, add to keg price.		@	2½
Lead, Red, bbls. and ½ bbls....	6¾	@	7½
Lead, Red, kegs.....	7	@	7¾
Litharge, kegs.....	7	@	7¾
Litharge, bbls. and ½ bbls.....	6¾	@	7½

TERMS, &c.—Lead and Litharge.—On lots of 1000 ℔ or over, 60 days' time or 2½ % discount for cash if paid within 15 days of date of invoice.

Ocher, Rochelle.....	1.85	@	1¼
Ocher, French Washed.....	1½@		2½
Ocher, German Washed....	1½@		3
Ocher, American.....	½@		1¼
Orange Mineral, English...	9	@	9½
Orange Mineral, French....	9½@		10
Orange Mineral, German ..	8½@		9½
Orange Mineral, American.	8	@	8½
Paris White, English Cliff-stone.....	90	@	1.10
Paris White, American.....	70	@	80
Red, Indian, English.....	5½@		7
Red, Indian, American....	2	@	6
Red, Turkey.....	9	@	14
Red, Tuscan.....	9	@	11
Red, Venetian, American.. ₩ 100 ℔.	1.00	@	1.35
Red, Venetian, English....	1.25	@	1.75
Sienna, Italian, Burnt and Powd.₩ ℔	5	@	6½
Sienna, Ital., Burnt Lumps	1½@		3½
Sienna, Ital., Raw, Powd..	5	@	6½
Sienna, Ital., Raw Lumps..	2	@	3½
Sienna, American, Raw....	1½@		1¾
Sienna, American, Burnt and Powdered.....	1½@		1¾
Talc, French.....	1½@		1¾
Talc, American.....	1	@	1¾
Terra Alba, Fr'ch. ₩ 100 ℔	72½@		80
Terra Alba, English	80	@	85
Terra Alba, American No.1	70	@	75
Terra Alba, American No.2	38	@	40
Umber, Turkey, Bnt. and Powd..... ₩ ℔	3½@		4
Umber, Turkey Bnt.Ln	2½@		3
Umber, Turkey, Raw and Powdered.....	3½@		
Umber Turkey, R'w Lmps	2½@		2¾
Umber, Turkey, Bnt. Amer.	1½@		1¾
Umber, Turkey, R'w Amer.	1½@		1¾
Yellow, Chrome.....	10	@	25
Vermilion, Americ. Lead..	11½@		17
Vermilion, Quicks'er, bulk.	..	@	75
Vermilion, Quicks'er, bags.	..	@	76
Vermilion, Quicksilver, smaller pkgs.....	..	@	80
Vermilion, English Import	82½@		85
Vermilion, Imitation, Eng.	8	@	25
Vermilion, Trieste.....	87½@		90
Vermilion, Chinese.....	90	@	95
Whiting, Common. ₩ 100 ℔	40	@	45
Whiting, Gliders'.....	50	@	55
Zinc, American, dry... ₩ ℔	4½@		5
Zinc, French, Red Seal.....	..	@	8½
Zinc, French, Green Seal..	..	@	8¾
Zinc, French, V. M. X.....	..	@	7
Zinc, Antwerp, Red Seal...	..	@	7¾
Zinc, Antwerp, Green Seal	..	@	8¼
Zinc, German, L. Z. O.....	..	@	6¾
Zinc, V. M. in Poppy Oil, G. Seal, lots of 1 ton and over.....	10¾@		11¼
lots less than 1 ton	11	@	11⅞
Zinc, V. M. in Poppy Oil, Red Seal,.....	..	@	..
lots of 1 ton and over....	10	@	10¼
Lots of less than 1 ton....	10¼@		10¾

DISCOUNTS.—French Zinc.—Discounts to buyers of 10- bbl. lots of one or assorted grades, 1 %; 25 bbls., 2 %, 50 bbls., 4 %. No discount allowed on less than bbl. lots.

Colors in Oil.

Blue, Chinese.....₩ ℔	35	@	40
Blue, Prussian.....	20	@	45
Blue, Ultramar.ine.....	12	@	18
Brown, Vandyke.....	7	@	12
Green, Chreme.....	8	@	13
Green, Paris.....	16	@	18½
Sienna, Raw.....	7	@	13
Sienna, Burnt.....	7	@	13
Umber Raw.....	7	@	10
Umber, Burnt	7	@	10

Spirits Turpentine.

In regular bbls.....38 @ 40½
In machine bbls.....38½@ 40¾

Glue.

Low Grade.....₩ ℔	8	@	10
Cabinet.....	12	@	14
Medium White.....	13	@	15
Extra White.....	17	@	20
French.....	10	@	..
English.....	10	@	15
Irish.....	12	@	15

CURRENT METAL PRICES.

JANUARY 7, 1891.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market reports.

IRON AND STEEL.

Bar Iron from Store.

Common Iron:	
⅜ to 2 in. round and square.. 1 to 6 in. x ⅝ to 1 in.....	₩ lb 2.00 @ 2.10¢
Refined Iron:	
⅜ to 2 in. round and square.. 1 to 4 in. x ⅝ to 1½ in..... 4½ to 6 in. x ⅝ to 1 in.....	₩ lb 2.10 @ 2.30¢
1 to 6 in. x ¼ and 5-16	₩ lb 2.30 @ 2.50¢
Rods—⅝ and 11-16 round and sq..	₩ lb 2.20 @ 2.40¢
Bands—1 to 6 x 3-16 to No. 12....	₩ lb 2.40 @ 2.60¢
"Burden Best" Iron, base price..	₩ lb..... 3.00¢
Burden's "H. B. & S." Iron, base price.....	₩ lb..... 2.80¢
"Ulster".....	₩ lb..... 3.00¢
Norway Bars	4.00¢
Norway Shapes	5.00¢

Merchant Steel from Store.

	Per pound.
Open-Hearth and Bessemer Machinery, Toe Calk, Tire and Sleigh Shoe, base price in small lots.....	2¾¢
Best Cast Steel, base price in small lots	8 ¢
Best Cast Steel Machinery, base price in small lots.....	5¢

Sheet Iron from Store.

	Common American.	R. G.	Cleaned.
10 to 16.....₩ lb	@ 3.00¢	3.35	@ .....¢
17 to 20.....₩ lb	3.15 @ 3.25¢	3.35	@ 3.75 ¢
21 to 24.....₩ lb	3.35 @ 3.35¢	3.60	@ .....¢
25 and 26....₩ lb	3.35 @	3.60	@ .....¢
27..... ...₩ lb	3.50 @ 3.62½¢	3.85	@ .....¢
28.....₩ lb	3.65 @ ....¢	4.10	@ .....¢
	B. B.		2d qual.
Galv'd, 14 to 20, ₩ lb,	4.75 @ ...	4.60	@ .....¢
Galv'd, 21 to 24, ₩ lb,	5.12 @ ...	5.00	@ .....¢
Galv'd, 25 to 26, ₩ lb,	5.50 @ ...	5.35	@ .....¢
Galv'd, 27..... ₩ lb,	5 90 @ ...	5.70	@ .....¢
Galv'd, 28..... ₩ lb,	6.25 @ ...	6.10	@ .....¢
Patent Planished.....	₩ lb A 10¢		B, 9¢
Russia.....	₩ lb 10½¢ @ 11¢		
American Cold Rolled B. B.....	₩ lb 5¢ @ 7¢		
Craig Polished Sheet Steel.....	₩ lb, 8½¢		

English Steel from Store.

Best Cast	₩ lb 15 ¢
Extra Cast	₩ lb 16½ @ 17 ¢
Swaged, Cast.....	₩ lb 16 ¢
Best Double Shear.....	₩ lb 15 ¢
Blister, 1st quality.....	₩ lb 12 ¢
German Steel, Best.....	₩ lb 10 ¢
2d quality.	₩ lb 9 ¢
3d quality	₩ lb 8 ¢
Sheet Cast Steel, 1st quality.....	₩ lb 15 ¢
2d quality.....	₩ lb 14 ¢
3d quality.....	₩ lb 12½¢
R. Mushet's "Special"	₩ lb 48 ¢
" " "Titanic".....	₩ lb 20 ¢

METALS.

Tin.

	Per lb
Banca, Pigs.....	.23 ¢
Straits, Pigs.....	.22¼¢
Straits in Bars...	.25 ¢

Tin Plates.

Charcoal Plates.—Bright.

		Per box.
Melyn Grade.....IC, 10 x 14..	@	$6.50
" " ... .IC, 12 x 12..	@	6.75
" " ..... IC, 14 x 20..	@	6.50
" " .....IC, 20 x 28..	@	13.25
" " ....IX, 10 x 14.. ...	@	8.00
" " ....IX, 12 x 12..	@	8 25
" " ....IX, 14 x 20..	@	8.00
" " .....IX, 20 x 28..	@	16.00
" " .....DC, 12½ x 17.. ...	@	6 00
" " .....DX, 12½ x 17..	@	7.50
Calland Grade.....IC, 10 x 14,.	@	6.50
" " .....IC, 12 x 12..	@	6.75
" " .....IC, 14 x 20.. . .	@	6.40
" " .....IX, 10 x 14..	@	7.65
" " .....IX, 12 x 12..	@	7.90
" " .....IX 14 x 20.	@	7.65
Allaway Grade.....IC, 10 x 14..	@	6.00
" " .....IC, 12 x 12..	@	6.15
" " .....IC, 14 x 20..	@	6.00
" " .....IC, 20 x 28..	@	11.80
" " .....IX, 10 x 14..	@	7.17
" " .....IX, 12 x 12..	@	7.90
" " .....IX, 14 x 20..	@	7.15
" " .....IX, 20 x 28..	@	14.25
" " ...DC, 12½ x 17..	@	5.65
" " ..DX, 12½ x 17.. 6.00	@	6.65

Coke Plates.—Bright.

Steel Coke.—IC, 10 x 14, 14 x 20,.	@	$5.60
10 x 20,.	@	7.75
20 x 28,. ...	@	11.25
IX, 10 x 14, 14 x 20..	@	6.50
BV Grade.—IC, 10 x 14, 14 x 20,. ...	@	5.60

Charcoal Plates.—Terne.

Dean Grade.—IC, 14 x 20..	@	$5.40
20 x 28.	@	10.70
IX, 14 x 20.....	@	6.10
20 x 28.....	@	12.10
Abecarne Grade.—IC, 14 x 20...	@	5.10
20 x 28...	@	10.35
IX, 14 x 20....	@	6.10
20 x 28..	@	12.10

Tin Boiler Plates.

IXX, 14 x 26.....112 sheets.....	@	$13.50
IXX, 14 x 28..... 112 sheets....	@	13.75
IXX, 14 x 31... ....112 sheets	@	15.25

Copper.

Duty: Pig, Bar and Ingot, 1¼¢; Old Copper, 1¢ ₩ lb. Manufactured (including all articles of which Copper is a component of chief value), 35 % ad valorem

Ingot.

Lake	@ 16½¢
Baltimore Grade.....	@ 15 ¢

Sheet and Bolt.

Prices adopted by the Association of Copper Manufacturers of the United States, December 5, 1890, being quotations for all sized lots.

Not wider than	Not longer than	And longer than	Weights per square foot and prices per pound. Over 64 oz.	32 to 64 oz.	16 to 32 oz.	14 to 16 oz.	12 to 14 oz.	10 to 12 oz.	8 to 10 oz.	Less than 8 oz.
90	72		22	22	22	23	24	25	28	30
90		72	22	22	22	23	25	27	31	....
96	96		22	22	23	24	26	30	33	....
96		96	22	22	24	25	27	31	35	....
96	96		22	22	24	26	28	32	....	....
96		96	22	22	25	27	29	33	....	....
96	96		22	22	27	29	34	....	....	....
96		96	22	23	28	....	....	....	....	....
96	96		23	24	....	....	....	....	....	....
96		96	24	25	....	....	....	....	....	....
Over 84 in. wide			25	27	....	....	....	....	....	....

All Bath Tub Sheets.... 16 oz. 14 oz. 12 oz. 10 oz.
Per pound.... .... $0.27 0.29 0.31 0.35

Bolt Copper, ¾ inch diameter and over, per pound..... 22¢

Circles, 60 inches in diameter and less, 3 cents per pound advance over lowest prices of Sheet Copper of the same thickness.

Copper Bottoms, Pits and Flats.

	Per pound.
14 ounce to square foot and heavier.....	26¢
12 ounce and up to 14 ounce to square foot.....	27¢
10 ounce and up to 12 ounce.....	29¢
Lighter than 10 ounce.....	32¢

Circles less than 8 inches diameter 2 cents per pound additional.

Circles over 13 inches diameter are not classed as Copper Bottoms.

Tinning.

Tinning sheets on one side, 10, 12 and 14 x 48 each.....	8¢
Tinning sheets on one side, 30 x 60 each.....	30¢
For tinning boiler sizes, 9 in. (sheets 14 in. x 60 in.), each.	15¢
For tinning boiler sizes, 8 in. (sheets 14 in. x 56 in.), each	12¢
For tinning boiler sizes, 7 in. (sheets 14 in. x 52 in.) each.....	12¢
Tinning sheets on one side, other sizes, per square foot.....	2½¢

For tinning both sides double the above prices.

Planished Brass and Copper.

14 x 48, 14 x 52, 14 x 56, 14 x 60 in.
14 and 16 oz. and heavier..33¢. By the case...32¢ ₩ lb
12 oz. and lighter.....35¢. By the case...34¢ ₩ lb
24 x 48 and 30 x 60.
14 and 16 oz. and heavier..36¢. 12 oz.....39¢ ₩ lb

Seamless Brass and Copper Tubes.

O. G.	N. G.	⅜	½	⅝	¾	⅞	1	1⅛
8-14	6-12	29	35	32	31	30	29	26
15	13	31	35	33	32	31	30	27
16	14	41	36	34	33	32	31	27
17	15	42	37	35	32	33	32	28
18	16	44	38	36	34	33	32	29
19	17	45	39	37	36	35	34	31
20	18-19	46	41	39	38	37	36	33
21	20	48	43	41	40	39	38	36
22	21	50	44	42	41	40	39	38
23	22	52	46	44	43	42	41	41
24	23	55	48	46	45	43	42	43
25	24	58	51	48	47	46	45	47

Copper Bronze and Gilding Tube, 4¢ ₩ lb additional.

Brazed Brass Tubing. (To No. 20, inclusive.

Above 5-16 inch to 3 inch, inclusive	35¢
Plain, above 3 inch.....	45¢
Plain, 5-16 inch.....	45¢
Plain, ¼ inch.....	50¢
Plain, 3-16 inch.....	$1.00
Plain, ⅛ inch.....	1.50
Fancy Tubing, Brass, to No. 20, inclusive.....	45¢ ₩ lb
bronze Tubing, 5¢ ₩ lb more than Brass.	
Discount from list.....	25 @ ... %

Roll and Sheet Brass.

(Brown & Sharpe Standard Gauge.)

Common High Brass: Wider than and including	in. 2 10	in. 10 12	in. 12 14	in. 14 16	in. 16 18	in. 18 20	in. 20 22	in. 22 24
To No. 20, inclusive....	.21	.22	.23	.25	.27	.29	.31	.33
Nos. 21, 22, 23 and 24.	.22	.23	.24	.26	.28	.30	.32	.34
Nos. 25 and 26.....	.22½	.23½	.24½	.27	.29	.31	.33	.35
Nos. 27 and 28..... ...	.23	.24	.25	.28	.30	.32	.34	.36

Common High Brass: Wider than and including	in. 24 26	in. 26 28	in. 28 30	in. 30 32	in. 32 34	in. 34 36	in. 36 38	in. 38 40
To No. 20, inclusive....	.36	.39	.42	.46	.50	.55	.60	.65
Nos. 21, 22, 23 and 24.	.37	.40	.43	.47	.51	.56	.61	.68
Nos. 25 and 26.....	.38	.41	.44	.48	.52	.57	.63	.71
Nos. 27 and 28..... ..	.39	.42	.45	.49	.53	.58	.65	.75

Brass and Copper Wire.

Old English guage standard.	Com. high brass. Per lb.	Low brass. Per lb.	Gildi'g br'ze & copper Per lb.
All Nos. to No. 16, inclusive....	$0.22	$0 26	$0.30
No. 17 and No. 18.....	.23	.27	.31
No. 19 " " 20.....	.24	.28	.32
No. 21.....	.25	.29	.33
No. 22.....	.26	.30	.34
No. 23.....	.28	.32	.36
No. 24.....	.30	.34	.38
No. 25.....	.32	.36	.40
No. 26.....	.35	.39	.43
No. 27.....	.38	.42	.46
No. 28.....	.42	.46	.51
No. 29.....	.45	.49	.54
No. 30.....	.48	.52	.62
No. 31.....	.51	.55	.67
No. 32.....	.55	.59	.73
No. 33.....	.59	.63	.82
No. 34.....	.64	.68	.95
No. 35.....	.70	.74	1.30
No. 36.....	.76	.80	1.50
No. 37.....	1.00	1.04	1.70
No. 38.....	1.30	1.34	2.00
No. 39.....	2.00	2.00	3.25
No. 40.....	2.60	2.60	5.75

Spring Wire, 2¢ ₩ lb advance.

Copper Belt and Hose Rivets and Burrs.

	Per lb.		Per lb.
No. 5.....	49¢	No. 11.....	56¢
No. 6.....	49¢	No. 12.....	58¢
No. 7.....	49¢	No. 13.....	60¢
No. 8.....	50¢	No. 14.....	65¢
No. 9.....	52¢	No. 15.....	70¢
No. 10.....	54¢		

Spelter.

Duty: Pig, Bars and Plates, $1.50 ₩ 100 lb.

Western Spelter	6½ @ 6¾¢
"Bertha"	8¼¢

Zinc.

Duty; Sheet, 2½¢ ₩ lb.

600 lb casks.....	7¼¢
Per lb	7¾¢

Lead.

Duty: Pig, $2 ₩ 100 lb. Old Lead, 2¢ ₩ lb. Pipe and Sheets, 2½¢ ₩ lb.

American	4½¢ @ 4¾¢
Bar.....	5 ¢
Pipe, subject to trade discount....	7½¢
Tin-Lined Pipe, subject to trade discount....	15¢
Block Tin Pipes, subject to trade discount.....	40¢
Sheet, subject to trade discount.....	8¼¢

Solder.

½ @ ½ (Guaranteed)...	16 ¢
No. 1.....	13¢
Extra Wiping.....	11¾¢ @ 15¢

The prices of the many other qualities of Solder in the market indicated by private brands vary according to composition.

Antimony.

Cookson.....	₩ lb 20 @ 20½¢
Hallett's.	" 18½¢

ALUMINUM.

Prices in Ingots.

$2.00 ₩ lb in lots of 1000 lb and over.
$2.25 ₩ lb in lots of 500 lb and over.
$2.50 ₩ lb in lots of 100 lb and over.

For prices on Rolled Sheets, Tubing, Casting and Wire, see *The Iron Age*, December 11, 1890, page 1170.

Old Metals.

(Prices Paid in New York.)

Heavy Copper..... ...	₩ lb 12 ¢
Light Copper...	₩ lb 11 ¢
Heavy Brass.....	₩ lb 10 ¢
Light Brass.....	₩ lb 8 ¢
Lead.....	₩ lb 4 ¢
Tea Lead.....	₩ lb 3½¢
Zinc.....	₩ lb 3 ¢
No. 1 Pewter.....	₩ lb 16 ¢
No. 2 Pewter	₩ lb 8 ¢
Wrought Scrap Iron.....	₩ gross ton $19.00
Heavy Cast Scrap.....	₩ gross ton 12.00
Stove Plate Scrap.....	₩ gross ton 8.00
Burnt Iron.....	₩ gross ton 6.00